Wealth Taxation of Real Estate during the Greek Crisis: The Perils of Ignoring Market Signals*

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Summary: During the Greek crisis the wealth tax on real estate (WTRE) was increased four-fold as a percentage of GDP in order to boost fiscal revenues. This increase contributed to an essentially complete freeze of the real estate market, a considerable drop in real estate prices, and a substantial deepening of the recession. Using conservative assumptions, we calculate that the WTRE increases unemployment by 70,000–100,000 persons yearly. Perversely, the net effect of the WTRE increase on fiscal revenues has been, at best, slightly positive if not quite negative, as the WTRE induces large tax losses by lowering household spending and housing investment. Moreover, the real estate market freeze prevents households from accessing their savings embodied in real estate in order to counter the recession's negative effects, and pay taxes and other debts. Reasons for this policy failure include flawed economic analysis, failure to monitor the real estate market, and cognitive biases.

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I Introduction

Among the various measures that policymakers[1] have taken in order to address the severe budgetary crisis that is plaguing Greece, one that stands out is the very large increase of the wealth tax on real estate (WTRE). In this paper we analyse not just the features of the tax, but also its effects on public finances and the Greek economy.

As Haliassos (2015) notes, real estate holdings are by the far the most important part of Greek households' assets. Household-level data from the 2013 Household Finance and Consumption Survey,[2] conducted in 15 Eurozone countries and coordinated by the European Central Bank (ECB), indicate that the vast majority of households' assets consist of real estate, and that the median household has very limited liquid assets. In particular, the median ratio across households of the value of real estate holdings to total gross assets is about 88 percent; at the 25th percentile it is still very large at about 62 percent. The total value of real estate is about 84 percent of all gross household assets. Moreover, the prevalence of real estate ownership beyond the principal residence is about 38 percent, the second highest in the Eurozone after the one in Cyprus which is at 51 percent (the corresponding figures for France and Germany are 25 percent and 18 percent, respectively). All these figures point to the fact that, over time, the largest share of Greek households' savings by far has been invested in real estate.

There are various reasons for this strong preference to invest in real estate, which, incidentally, is common to all Southern European countries. Real estate is traditionally viewed as a relatively safe investment that protected a family's savings from the high inflation, currency devaluations, government defaults, stock market shenanigans, wars, and political upheavals that have plagued Greece throughout its modern history better than liquid assets. In addition, parents have traditionally given their children real estate as a gift or an inheritance in order to help them set up a new household.

Given the prevalence of real estate holdings in Greece, it is no surprise that the large increase in WTRE has had correspondingly large effects. We find, using very conservative assumptions, that it has deepened and prolonged the already deep recession, roughly costing between 70,000 and 100,000 jobs each year, and causing a corresponding annual drop in GDP of between 6 and 9 billion euro. Crucially, its impact on tax revenues has been at best insignificant if not quite negative. This fiscal outcome, which is the exact opposite of what policymakers had in mind, is due to tax losses induced by the WTRE, as the latter: i) lowers consumption, due to its negative impact on disposable income and real estate wealth; ii) lowers housing investment; and iii) contributes (partly due to its extreme progressivity) to the freezing of the real estate market that prevents households from accessing their savings embodied in real estate. As a result, they are unable to increase their spending so as to smooth consumption and absorb the recession's negative economic shocks. They are also unable to use these savings to pay their outstanding taxes and debts, thus reducing tax receipts and increasing the amount of non-performing loans, which in turn necessitates an increase in the financial support of banks by the government.

1 We include among the policymakers the Greek governments (past and present), the International Monetary Fund, the European Commission, and the European Central Bank. Following established practice, we refer to the latter three as the Troika.

2 For more details on the Household Finance and Consumption Survey, see Household Finance and Consumption Network (2013a, 2013b).

Overall, the enormous increase in the WTRE is an appalling policy failure that has devastated the Greek economy and considerably worsened the already severe economic problems faced by millions of Greek households. There are multiple reasons for this policy failure, including deeply flawed economic analysis, failure to monitor the state of the real estate market, cognitive biases, and various prejudices.

In Section 2 we discuss the WTRE. In Section 3 we look at the state of the Greek real estate market, while in Section 4 we examine how the WTRE affects tax revenue. In Section 5 we discuss various arguments proposed in favour of the WTRE. Section 6 concludes.

2 The WTRE and the state of the Greek real estate market

Recurrent taxes on immovable property have progressively increased from about 0.41 percent of GDP in 2007 to about 1.78 percent of GDP in 2014, i. e. more than four times relative to the size of the economy.[3] The increase in absolute values has been roughly a three-fold one (from about 1 billion euro to about 3.15 billion euro). This increase in recurrent taxes on immovable property is quite simply enormous, especially if one takes into account the fact that it has taken place in the midst of the most severe economic crisis ever seen in an industrialized country since World War II. It has been brought about almost entirely by the various incarnations of the WTRE,[4] as local taxes have not changed in the last few years.

The Troika has strongly favoured the WTRE, and its experts have been closely involved with its design. This policy view is evidenced in an article in the August 2015 Memorandum of Understanding agreed between the Troika and the Greek government, which stipulates that proceeds from the WTRE must remain stable at 2.65 billion euro, irrespective of what happens to cadastral values (see below for further discussion of this point).

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3 We include in the definition of recurrent taxes on immovable property items D29AA, D29AB, D59AA, D59AB, D59FA in the National Tax Lists file compiled by Eurostat (2015), which contains data up to 2012. For data on 2014, we use the Greek government's announcements concerning the most recent version of the WTRE, namely the Unified Tax on the Ownership of Real Estate (Ενιαίος Φόρος Ιδιοκτησίας Ακινήτων in Greek or (ΕΝΦΙΑ)). The Greek government announced that ΕΝΦΙΑ brought in about 2.65 billion euro. To maintain comparability over time, we add to this figure the value of recurrent taxes on immovable property levied by local authorities, for which no data are available on a consistent basis. We estimate these taxes to be equal to at least 500 million euro. The details of our calculations are as follows: i) one of the local taxes (Τέλος Ακίνητης Περιουσίας) has a rate of 0.035 percent, which on an estimated value of real estate of about 600 billion euro (or two-thirds, after taking out the value of agricultural land, of the total value of real estate of about 900 billion euro calculated using 2007 cadastral values, as reported below), should generate proceeds of about 200 million euro; and ii) additional fees (δημοτικά τέλη) that are levied to finance local public services, which are typically much larger than the tax in i), and hence we conservatively estimate them to be equal to 300 million euro. Our calculation of 3.15 billion euro in recurrent property taxes for 2014 may be an underestimate if one uses OECD data. In OECD (2015a), recurrent property taxes (item 4100) for 2013, i.e. the last year for which complete data are available, are about 3 billion euro. One likely needs to add to this sum at least part of item 4200 (recurrent taxes on net wealth), which is equal to about 1.1 billion euro. Taxes on sales of property, on gifts in the form of real estate, and on inheritance are not considered recurrent property taxes, and are thus excluded from our discussion.

4 The WTRE has had various incarnations over the years. It existed in 2007 and was levied on the total value of one's property, using a progressive rate schedule. The rates at which it was levied were increased in 2008 and even more in 2009. In 2010 there was a further very large increase of the rates, while a new additional tax was introduced in 2011 through 2013 and was levied on each property separately. Remarkably, policymakers decided to tie payments of this new tax to the electricity bill corresponding to each property, so as to make these payments harder to avoid. Finally, the latest version of the tax, the Unified Tax on the Ownership of Real Estate (ΕΝΦΙΑ) was introduced in 2014.

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Policymakers have implemented these increases in the WTRE because they wanted to quickly increase tax revenue for the general government; this tax is unrelated to the needs or characteristics of local governments (who get a very small part of it), and all its incarnations have included a component (and in years prior to 2011 it was the only component) that calculates the tax on the accumulated value of all properties owned by an individual. Therefore, this tax can only be considered to be a wealth tax that is assessed exclusively on real estate holdings. Remarkably, this tax is assessed on the gross (i. e. the cadastral) value of real estate, i. e. it does not take into account any loans linked to it (e. g. mortgages); obviously, this feature makes it much more onerous for the taxpayer to bear.

As the WTRE is levied using cadastral values, it is important to discuss how these are related to actual market prices. The first thing to note is that dwellings' prices have fallen by about 40 percent between 2007 and the 2nd quarter of 2015 (Bank of Greece (BoG) 2015a). Given that consumer prices (as measured by the Harmonized Index of Consumer Prices) have increased by about 13 percent during the same period, the real drop in dwellings' prices is about 53 percent. Furthermore, the drop in commercial real estate prices in Athens between 2007 and 2014 is equal to about 34 percent (BoG 2015b, 2015c).[5] Given this massive drop in real estate prices, it is remarkable that policymakers have refused to adjust cadastral values, which have stayed constant at the 2007 levels. This refusal is due to their desire to get as much revenue out of the WTRE as possible, with inflated cadastral values serving this purpose quite well. In 2015 the Council of State (the top Greek civil court) has deemed this practice unconstitutional, ordering the government to assess the WTRE using updated cadastral values. The decision by the Council of State is most probably the reason why the Troika insisted on the aforementioned Memorandum article that emphasizes the need to keep tax proceeds from the WTRE constant, irrespective of what happens to cadastral values.

Policymakers, however, have quite simply refused to comply with the court's decision and have instead assessed the 2015 WTRE using the 2007 cadastral values. Even if they eventually decide to adjust the cadastral values downwards, it is likely that this adjustment will be small, in order to keep the assessed value of the WTRE as high as possible. It is also likely that, should cadastral values be adjusted downwards in the future, the tax rates of the WTRE will increase and/or the already very stringent conditions under which relief from the WTRE is currently provided will be further tightened.

The latest incarnation of the WTRE is the Unified Tax on Ownership of Real Estate (ΕΝΦΙΑ in Greek). It has two components: the first one (the basic tax) is applied using a tax amount per square meter, and it is roughly equal to 0.3–0.35 percent of the cadastral values, depending on the value of the real estate and other features like the age of the building, the number of façades, and the floor on which an apartment is located, etc. The second component (the supplementary tax) is a tax levied on the total value of someone's property. Taxation starts at a rate of 0.1 percent for values above 300,000 euro and up to 400,000 euro, and then is equal to 0.2 percent for values between 400,000 euro and 500,000 euro, to 0.3 percent for values between 500,000 euro and 600,000 euro, to 0.6 percent for values between 600,000 euro and 700,000 euro, to 0.7 percent for values between 700,000 euro and 800,000 euro, to 0.8 percent for values between 800,000

5 There are no corresponding series for other parts of the country, as the relevant price indices have been compiled from 2010 on. However, the path of prices has been broadly similar from 2010 on between Athens and the rest of the country.

euro and 800,000 euro, to 0.9 percent for values between 900,000 euro and 1,000,000 euro, and to 1 percent for values above 1,000,000 euro.

The first thing to observe is the very steep progressivity of the supplementary tax schedule, which imposes a ten-fold increase in the marginal tax rate going from 300,000 euro to 1,000,000 euro in cadastral value. We are not aware of another example of a wealth tax that entails such steep progressivity for changes in value of the order of 700,000 euro. Thus, it is clear that the policymakers' objective is to transfer the burden of the tax as much as possible to the relatively few owners who have properties valued beyond 600,000 euro, as the jump of the marginal rate above this level is a steep 0.3 percent.

Putting a disproportionately high tax burden on those who have large real estate holdings has a variety of negative consequences. First, it makes the tax less likely to be paid. In fact, the assessed value of ΕΝΦΙΑ is 3.3 billion euro, while the aim is to bring in 2.65 billion euro, meaning that 20 percent of the assessed tax is predicted to go unpaid. The burden to owners increases if one considers that cadastral values are much higher than market ones. Furthermore, a property owner has to pay various local taxes and fees. Things become worse if one considers that, as discussed above, the tax is assessed without accounting for any loans on the property. One should also keep in mind that the owner has no right to any tax relief unless a set of very stringent conditions are satisfied.[6] The worse part comes, however, from the fact that, as discussed below, it is currently practically impossible for owners to sell any real estate in order to reduce their tax liability, as the real estate market in Greece has essentially ceased to function. This is especially true for high-valued properties. Hence many owners are trapped owing a high WTRE for the foreseeable future on properties that cannot be sold.

It is instructive to compare the levels of the Greek WTRE to similar wealth taxes levied in two other Southern EU countries, namely Italy and Spain. In both countries these taxes were introduced in 2012 in order to increase revenue during the Eurozone crisis. In Italy the wealth tax on real estate (IMU) has a rate equal to 0.76 percent on average, while for an owner-occupied house the rate falls to 0.4 percent. Significantly, the Italian cadastral values are much lower than market ones. In Spain, there is a wealth tax (Patrimonio) assessed on the values of all assets, both real and financial. There is an allowance of 700,000 euro per person, plus an allowance of 300,000 euro for the main home. The values of all debts are deducted from the tax basis. Hence is someone has assets equal valued at 1,200,000 euro and a mortgage loan of 200,000 euro on a house in which she lives and is valued at 300,000 euro, then she pays no wealth tax.

Let us now consider two cases: one in which the market value of the property is 200,000 euro and one in which it is equal to 800,000 euro. In Greece, and assuming that cadastral values are about 30 percent higher than market ones, the values on which the WTRE will be assessed are about 285,000 euro and 1,150,000 euro, respectively. Assuming a basic tax rate of 0.32 percent, the total amount of WTRE due in Greece (equal to the sum of the basic and the supplementary tax) will be 912 euro and 8,780 euro, respectively. We thus see that a four-fold increase in the val-

6 The conditions for obtaining a 50 percent relief from the WTRE, all of which must be satisfied, are: i) a taxable income of at most 9,000 euro for a single person or 12,000 euro for a couple; ii) a total property value of at most 85,000 euro for a single and 150,000 euro for a couple, and one's properties should include no structures that have a surface of more than 150 square meters in total; and iii) there should be no unpaid overdue taxes to the government, for which the taxpayer has not agreed with the tax authorities on a payment schedule.

ue of the property leads to an almost ten-fold increase in the tax liability. This very large increase is due to the very steep progressivity of the supplementary tax schedule. In Italy, on the other hand, assuming that part of the property refers to an own-occupied home and thus applying a rate of 0.5 percent, the amounts due would be 1,000 euro and 4,000 euro, respectively. In fact, given that Italian cadastral values are typically much lower than market prices, the actual amounts due are likely to be much lower than the ones calculated here. In Spain, there would be no wealth tax due in either case, assuming a value of an own-occupied home of at least 100,000 euro.

Hence, the WTRE exerts a much higher burden in Greece than Italy or Spain. We note that this happens in the midst of an unprecedented shrinkage of the Greek economy; between 2007 and 2014 GDP shrunk by 25 percent, which has led to large reductions in Greek households' disposable income. In this regard, it is instructive to compare the average wage (gross of employee social insurance contributions and income taxes) between Greece and the other two countries, as reported by the Organization of Economic Cooperation and Development (OECD 2015b): 20,168 euro in Greece, 30,463 euro in Italy and 26,162 euro in Spain. Hence, Greeks have to pay much higher wealth taxes while earning much less than their Italian and Spanish counterparts.

The very steep progressivity of the WTRE in Greece has likely an additional very pernicious effect: it discourages real estate acquisition. The vast majority of prospective real estate buyers in Greece must currently rely on their own funds to acquire real estate, as Greek banks have essentially stopped providing loans to the household sector (e. g. mortgage credit outstanding has been shrinking rapidly since the onset of the financial crisis). It is likely that individuals who have enough liquid assets to buy property have already invested some of their wealth in real estate (as already noted, an overwhelming share of Greek households' wealth is invested in real estate). Hence, if they buy some additional real estate, they must pay a considerably larger WTRE due to the steeply progressive supplemental tax schedule. In other words, real estate to be acquired carries a very large tax burden that is partly due to the existing real estate holdings of the prospective buyer. In contrast, these taxes are not imposed on investments in bonds, mutual funds, or on savings kept in bank accounts.

One may argue that prospective real estate buyers fully capitalize these large future tax payments and thus make low offers to sellers; in this case, they might still be able to buy the property. However, this view ignores the crucial fact that liquidity is at a premium at a time when nobody lends to households; hence, it is very dangerous to be burdened with very high tax payments for the foreseeable future, as they might be hard to honour in case of a negative shock. In addition, these large tax payments are unlikely to decrease in the future, given policymakers' attachment to the WTRE; rather, these taxes are much more likely to increase further due to Greece's dismal fiscal situation. Finally, what is even worse for any prospective buyer is the complete freeze of the market; nobody wants to buy an asset only to have no possibility to re-sell it. Hence the freezing of the market creates a vicious circle: it discourages prospective investors, who thus stay away from the market, and this in turn solidifies the market freeze.

Overall, the WTRE most likely acts as a powerful deterrent for the acquisition of any further property, especially if it is a large-valued one. In the next Section we discuss in greater detail the implications of a reduced volume of real estate transactions.

3 The freezing of the real estate market and its implications

To the best of our knowledge, what has happened to the Greek real estate market is unprecedented in the recent economic history of advanced economies: the volume, and especially the value, of transactions have been reduced to a startlingly large extent. In other words, the Greek real estate market is currently essentially frozen.

Data from the Bank of Greece (BoG 2015d) suggest that from 2007 to 2012 the number of real estate transactions in Athens, as compiled by the Athens Bar Association (a lawyer's presence was mandatory for all such transactions up to 2012), declined by 79 percent while the value of such transactions by 83 percent. To get an idea on developments beyond 2012, one can use data from the Hellenic Cadastral Registry, which indicate that transactions in Athens declined from 2012 to 2014 by another 70 percent. This implies that both the number and the value of transactions have declined by well above 90 percent compared to 2007. In other words, the real estate market in the greater Athens area, in which about 40 percent of the Greek population resides, has been annihilated.

For the whole country, the Hellenic Statistical Authority (HSA) reports that transactions reflecting buying and selling of real estate fell by about 71 percent from 2007 to 2013, while the drop from 2005 (the peak year for transactions) is about 77 percent (HSA 2015a). If one adds a drop in appraisals-related transactions by banks in 2014, as recorded by the BoG (2015d), then the overall drop in transactions from 2007 to 2014 is about 80 percent. The value of these appraisals (which can be linked to transfer of ownership, mortgage origination and renegotiation, or other real-estate related transactions) has fallen by about 92 percent in value from 2007 to 2014.

Before discussing the implications of the freezing of the Greek real estate market, it is important to point out the pervasive problem of liquidity-constrained households, as indicated by the large value of various unpaid obligations by the private sector. First of all, overdue taxes are about 80 billion euro (about 45 percent of GDP). The number of entities (the overwhelming majority of which are individuals) that owe these taxes is more than 3 million, when the adult Greek population is about 9.1 million. The value of non-performing loans in Greek banks' balance sheet is a bit larger than 100 billion euro (i. e. about 55 percent of GDP; BoG 2015e: p. 14). Finally, about 2.1 million connections to the electricity network (the overwhelming majority of which are linked to individuals) are associated with overdue bills.[7]

The presence of all this unpaid debt is a very strong indicator of a large prevalence of households that have problems making ends meet. Hence, they are likely to be liquidity-constrained, i. e. they have no or no access to savings, and thus must live a hand-to-mouth existence, leaving many of their obligations unpaid.

The freezing of the real estate market, when combined with the presence of liquidity-constrained households, is simply a devastating blow to the Greek economy. One must consider that real estate is the predominant vehicle in which the saving of Greek households (both past and present) is stored. Hence, a frozen real estate market implies that households have practically lost access to their savings. It is difficult to find words that can adequately describe how devastating this

7 According to the 2011 Population and Housing Census, the number of dwellings was about 6.37 million (HSA 2014).

blow is to households' welfare; savings are put aside at times of prosperity so as to have access to them during times of need. As a result, negative shocks to households' finances can at least be partially absorbed by drawing on these savings, and thus fluctuations in households' living standards are moderated. If households cannot access their savings by selling their real estate due to the freezing of the market, then they can only rely on their current incomes, which are likely much reduced due to the crisis. Hence, they are likely to considerably reduce their spending, thus having a much lower standard of living. The vital importance of the process of building up and drawing down savings, known as consumption smoothing, is generally accepted by virtually all schools of economic thought, whatever their other differences might be.

Furthermore, it is important to consider that a large number of households that want to sell real estate in the midst of the current recession likely want to do so not only to maintain their living standards, but also to pay debts to banks or taxes to the government. Hence, the freezing of the real estate market not only lowers their living standards, but also lowers the tax proceeds to the Government, and keeps banks in dire shape as loans remain unpaid. In contrast, those who buy real estate are only making a shift in their portfolio by using their savings in the form of liquid assets (or others' savings if they manage to obtain a bank loan) to finance their purchase of real estate. Hence, a change in property ownership is likely to lead to a net increase in aggregate demand in the economy due to the increased spending by the seller, as well as to higher tax receipts and fewer non-performing loans.

The enormous increase in the WTRE is obviously not the only adverse shock to hit the Greek economy during the crisis. Greece also experienced a severe drop in economic activity, a tightening of bank credit and considerable political uncertainty during this period. All these factors contribute to a drop in the demand for real estate. On the other hand, they are likely to lead to an increase in the supply, as owners have difficulties making ends meet, paying the increased WTRE, or just want to have more liquid assets so as to weather the economic storm. Both an increase in supply and a drop in demand unambiguously lead to a drop in prices, which is what has happened in Greece, as already discussed. The overall effect on the volume of transactions is less clear *a priori*, as the higher supply would tend to increase it, while the lower demand decrease it. Obviously, given the aforementioned very severe drop in real estate transactions, the effect of the drop in demand has been much stronger than that of the increase in supply. To put things plainly, there are currently very few individuals buying real estate in Greece.

While it is not easy to precisely determine the contribution of the WTRE to the freezing of the real estate market and the associated problems that it creates, one should keep in mind the enormity of its increase, as well as its steep progressivity that, combined by the unrealistically high cadastral values, severely discourages any prospective buyers. Hence, there is very little doubt that the WTRE has contributed significantly to the lack of interest in Greek real estate.

Unfortunately, there is no indication that policymakers have realized the implications of the frozen real estate market. In fact, there is one clear indication that they do not fully understand what is going on, as shown by the sad tale of the capital gains tax. This tax was included in a law passed in 2013 with the prospect of being first implemented in 2014. During the first four months of 2014, the Greek government and the Troika debated the details of implementing this tax. As a result, there were essentially no real estate transactions during those four months, as all market participants were waiting for the dust to settle, while the tax authorities would allow virtually no real estate transactions to go through. After policymakers reached an agreement, the

tax was implemented. Predictably, its proceeds were trivially small; after all, its tax basis consists of transactions, and there are currently very few of these in Greece. Hence, in late 2014 policymakers decided to suspend the tax until 2017.

To recap, policymakers introduced a major new tax levied on a non-existent tax basis, then blocked the real estate market completely for four months before reaching an agreement on how to implement this new tax (in the process making Greece the only country in which virtually no real estate transactions took place in that period, other than North Korea and war zones), only to suspend the tax a year after its introduction due to its utter failure to generate significant revenue. Unfortunately, a necessary condition for such a woeful policy debacle is the failure of policymakers to adequately monitor the state of the Greek real estate market.

It is quite hard to understand the reasons behind this failure. After all, policymakers were not dealing with an opaque financial product whose properties are difficult to grasp, but rather with ordinary real estate, whose market is the second, after the labour market, most important in any economy, and which constitutes the most common household asset in industrialized countries. Furthermore, detailed statistics on the real estate market are made freely and widely available by the Bank of Greece and the Hellenic Statistical Authority.

The policymakers' failure to understand the implications of the enormous increase of the WTRE can be examined also through another angle, namely using a thought experiment involving banks. Let us suppose that all banks have one asset in their balance sheet, which is very illiquid. Let us also suppose that the market for this asset is essentially frozen, that banks are losing money, and thus desperately need to sell some of their holdings of this asset in order to fund their balance sheet. Let us further suppose that banks have no access to a lender of last resort, thus making their dependence on the sale of this asset even more critical. If in this situation someone proposed a four-fold increase in taxes on this asset as a way to make things better, it would be fair to say that her suggestion would not be treated kindly. Instead, policymakers would most likely try to relieve the banks' stress by taking all the necessary measures to restore liquidity in the market in order to facilitate transactions. If this asset were taxed, then such measures would almost surely include a considerable reduction of the associated taxes. Policymakers would act this way because the importance of financial market liquidity is by now well understood, as is the general importance of a healthy financial system.

Unfortunately, policymakers acted in exactly the opposite direction in the case of the household sector and its real estate holdings, at a time when households are unable to borrow and the real estate market is completely frozen. Policymakers should have realized that this situation is a real emergency, and that the frozen market has extremely negative implications for aggregate demand in the economy, government tax receipts, and the financial system, as there is simply no way financial intermediation can work properly when there is no market for the collateral asset behind most loans. Regrettably, policymakers insisted on administering the worst possible remedy, namely a four-fold increase in the WTRE, with predictably disastrous consequences for both households and the financial system.

4 The effect of the WTRE on tax revenues

The main reason for the introduction of the WTRE was clearly to increase tax revenues. Given the very strong insistence of the Troika on the continued imposition of this tax, it would be fair to say that it believes that this tax has indeed succeeded in its main aim. Some policymakers have been known to wonder how the 2.65 billion euro that the WTRE (ΕΝΦΙΑ) ostensibly collects would be replaced, should the WTRE be abolished. We call the belief that a tax's gross receipts are roughly equal to the net ones the doctrine of immaculate taxation (DIT). This section examines whether adherence to the DIT is justifiable.

To assess the fiscal implications of the WTRE we use the notion of the multiplier, which indicates how much a country's GDP changes due to a fiscal measure. For example, a multiplier of 1.2 implies that an increase in taxes of 1 euro leads to a decrease in a country's GDP of 1.2 euro.[8] Given that economics is far from a precise science, the size of multipliers is the object of considerable discussion and disagreement. A watershed moment in this discussion was provided by the by now famous paper by Blanchard and Leigh (2013),[9] which concluded that multipliers were been generally underestimated, and that they were likely to be between 0.9 and 1.7 during a recession. Similarly, Perotti (2012) finds that discretionary taxation (an instance of which is provided by the WTRE) has a multiplier of 1.5. Large fiscal multipliers are also found by Auerbach and Gorodnichenko (2012, 2013). Importantly, the size of the multiplier tends to increase in situations in which there is a high prevalence of liquidity-constrained households and in countries in which external transactions are relatively small. Greece amply fulfils both these requirements.

Clearly, a large multiplier invalidates the DIT. The WTRE is an autonomous tax (i. e. it does not depend on income) that has its own multiplier. Hence, an increase in the WTRE reduces economic output in a variety of ways, which in turn lead to reduced tax proceeds. As a result, the net receipts from the WTRE could be much smaller than the gross ones. We examine the fiscal impact of the WTRE under two scenarios: one in which the multiplier is equal to 1 and another in which it is equal to 1.5.

The first negative effect of the WTRE on tax revenues is due to its negative direct impact on households' disposable income. If the multiplier is equal to 1 (1.5) then GDP decreases by 2.65 (4) billion euro. Given that government revenues, including social insurance contributions (which depend on GDP), are equal to about 35 percent of GDP (excluding receipts from the WTRE),[10] this decrease in GDP implies that tax proceeds decrease in turn by about 0.93 (1.39) billion euro.[11]

8 We adopt the convention of using the absolute value of the multiplier. The sign of the tax multiplier is almost always negative because in almost all circumstances a rise in taxes reduces economic output.

9 Blanchard was the chief economist at the IMF at the time the paper was written.

10 Government revenue, including recurrent property taxes, was about 37.6 percent of GDP in 2013, the last year for which complete data are available (OECD 2015a,c).

11 The above calculation assumes that the share of taxes in Greek GDP is constant, i. e. that the elasticity of tax receipts with respect to GDP is about 1. Mourre et al. (2013: Table A.3, p. 32) estimate the tax elasticity in Greece to be equal to 0.92. On the other hand, the share of taxes in Greek GDP has steadily increased from 32.9 percent in 2007 to 37.6 percent in 2013 (OECD 2015a, c), due both to large increases in taxes and more stringent enforcement of tax laws. This increase in revenues as a share of GDP points to an elasticity that is larger than 1. Overall, we believe that a value of 1 for the tax elasticity is reasonable.

The second negative effect of the WTRE comes through its effect on real estate wealth. The WTRE negatively affects real estate wealth, just as a tax on any asset (e.g. an increase in the dividend tax reduces the value of shares). A drop in real estate wealth reduces final consumption, as households feel less secure about their economic position due to their reduced wealth. This is a decrease in autonomous consumption, thus independent of what happens to disposable income, as it is exclusively due to a drop in real estate wealth. To determine the size of this drop in autonomous consumption one must estimate by how much real estate wealth declined due to the WTRE, and what is the propensity to consume out of real estate wealth.

To the best of our knowledge, there is no official estimate of the aggregate value of real estate in Greece at market prices. An unofficial calculation by the Bank of Greece put its value close to 1 trillion euro at the peak of the real estate market in 2007.[12] Given that real estate prices have fallen about 35–40 percent since then, the total value of real estate should be about 600 billion euro, with the drop in real estate wealth equal to about 350 billion euro. One then must determine how much of this drop is due to the WTRE. A rough estimate can be computed by noting that if one were to increase the tax on a piece of real estate by an amount equal to 0.3 percent (the average rate of the basic tax) of its value, and if this tax is applied in perpetuity, then with a discount rate of 2 percent (which is a rather large value given the current environment of very low interest rates) the drop in the value of real estate is about 15 percent. If one assumes a new tax equal to 0.7 percent of the real estate's value (so as to incorporate the extremely progressive supplementary part of the WTRE), then the asset's value drops by about 35 percent. If a drop in real estate prices of 35–40 percent is equal to about 350 billion euro in real estate wealth losses, then a drop of 15 percent due to the WTRE represents a drop in wealth of about 130 billion euro. Another way to arrive at a loss of a similar order of magnitude is to simply discount in perpetuity the increase in the WTRE of 2.8 billion euro (from about 500 million euro in 2007, after excluding local taxes, to about 3.3 euro billion, which is the assessed value of ENΦIA). This calculation gives a real estate wealth loss of about 140 billion euro. In our calculations, and to bias our results against our premise, we conservatively assume as a benchmark a drop of 100 billion euro in aggregate real estate wealth due to the WTRE. Given the enormity of the increase of the WTRE, the extreme progressivity of its supplementary part, and the essentially complete freezing of the real estate market, this estimate is most likely very conservative.

The second magnitude needed is the marginal propensity to consume out of real estate wealth. While there is considerable disagreement about its magnitude in the related literature, a very conservative estimate would be about 1 percent.[13] In other words, for every 1 euro of a drop in real estate wealth, households reduce their spending by 0.01 euro. Hence, a 100 euro billion loss in real estate wealth leads to a 1 billion euro drop in autonomous consumption. Given that autonomous consumption is part of private spending, a multiplier of even 1.5 seems like a large underestimate. Be that as it may, if the multiplier is 1 (1.5), then GDP drops by 1 (1.5) billion euro, and taxes are thus reduced by 350 (525) million euro.

A third negative effect of the WTRE on tax revenue is due to the negative impact of this tax on housing investment. As the WTRE reduces the rate of return on housing investment, it should

12 We are grateful to C. Akantziliotou and T. Mitrakos for providing us with this information.

13 Several studies estimate marginal propensities to consume out of housing wealth that are much larger than 1 percent. See, e.g., Case et al. (2005), Campbell and Cocco (2007) and Carroll et al. (2011).

make investment less attractive, as it becomes less profitable. A negative association between a tax on investment returns and investment demand is a plausible assumption for every asset class. In order to evaluate quantitatively this channel one must calculate the user cost of capital, which is equal to

$$\left(P_H / P_O\right)\cdot\left(i+\delta+\tau-\left(\dot{P}_H / P_H\right)\right),$$[14]

where P_H denotes the price of housing, P_O the price of output, i the nominal interest rate, δ the depreciation rate allowed in the tax code (which is typically larger than the true economic depreciation rate), τ the property tax rate, and $\dot{P}_H / P_H$ the rate of price appreciation of the house. Plugging in plausible values for these magnitudes,[15] one estimates the increase in the cost of capital due to the WTRE to be a little more than 40 percent. Investment is generally considered not very sensitive to the cost of capital, and hence we assume an elasticity of only –0.4 (Gilchrist and Zakrajsek 2007: Table 9, estimate it to be about –0.45 in the short run, and about –1 in the long run (Table 8)). This implies that the WTRE-induced increase in the cost of capital of 40 percent reduces housing investment by about 16 percent.

A value of –0.4 is likely to be an underestimate of the elasticity of housing investment, as housing is generally considered more elastic than other investment goods (Brayton and Clark 1988). One reason for this is that housing investment is typically small-scale and requires shorter periods of planning and execution than most other types of investment. Hence, its response to changes in economic conditions can be quicker and larger.

Investment in dwellings has fallen in constant prices from about 24.8 billion euro in 2007 to about 2 billion euro in 2014, a drop of 22.8 billion euro. The figure for 2014 represents an astonishingly low share of GDP of about 1.1 percent (investment in dwellings in the Eurozone was about 5 percent of GDP in 2014). If we assume that the aggregate value of dwellings is about 400 billion euro (i. e. about two-thirds of the total value of real estate assumed above),[16] and an economic depreciation rate of 2 percent per year, then the Greek economy needs to generate housing investment of 8 billion euro just to replenish its housing stock. Given that the actual amount invested in dwellings is about 2 billion euro, the stock of housing is reduced by about 1.5 percent (= 6/400) per year, which is an absolutely remarkable pace if sustained over time.

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14 The formula for the user cost of capital is a standard one, first derived by Hall and Jorgenson (1967). We do not include in the cost of capital the present value of the tax reductions due to housing depreciation because most households are not entitled to such deductions. We also exclude any mortgage interest tax credits, as they have been abolished since 2013.

15 We assume a long term interest rate before the WTRE of 5 percent, which is the average long term interest rate in Greece up to 2007. We further assume that the WTRE increased this interest rate to 6 percent, which is a very conservative assumption because banks essentially stopped lending to the real estate sector, as the market is completely frozen. We also assume that the depreciation allowed in the tax code is 5 percent and constant throughout, while the property tax rate increases from 0.1 percent to 0.4 percent due to the WTRE. Moreover, we assume that the change in house prices was about 2 percent per year up to 2007 so as to keep the real price of housing constant, while after 2007 and due to the WTRE the overall price decrease has been about 15 percent through 2015 as already discussed, which translates to a house price drop of about 2 percent per year due to the WTRE. Finally, we assume that the price of housing has dropped by 15 percent due to the WTRE, as discussed earlier in this section, while the general price level has increased by about 13 percent (as measured by the Harmonized Index of Consumer Prices). If one substitutes these figures in the formula for the cost of capital, then its increase post-2007 that can be attributed to the WTRE is about 40 percent.

16 In the US, the ratio of the value of residential structures to the total value of real estate held by households is about 71 percent. This ratio should be somewhat lower in Greece given that land in the US is relatively abundant; hence, we assume that in Greece it is equal to about 2/3.

If 16 percent of the drop from a level of housing investment of 24.8 billion euro in 2007 is due to the increased cost of capital due to the WTRE, then this implies that the WTRE is responsible for about 4 billion euro out of the total drop in investment of 22.8 billion euro. One might counter that the 24.8 billion euro in housing investment in 2007 is an abnormally large amount, as it was equal to about 10 percent of GDP, while the Eurozone average was about 6.5 percent of its GDP in that year. To address this concern, one could apply to Greece the Eurozone share of housing investment in GDP and get an amount that is closer to the Eurozone average, and equal to 16.3 billion euro (instead of the actual 24.8 billion euro). In this case, a WTRE-induced investment drop of 16 percent amounts to about 2.6 billion euro.

One can try to estimate the effect of the WTRE on housing investment by also examining the price elasticity of such investment. Topel and Rosen (1988) estimate this elasticity to be about 1 in the short run, and about 2.7 in the longer run. This latter response, however, is reached in only about one year, which implies a quick and large response of housing investment to the business cycle. Using the smaller short-run price elasticity estimate of 1, a WTRE-induced 15 percent drop in house prices as (discussed above) should reduce housing investment also by 15 percent. Hence, using again very conservative assumptions, we arrive at about the same conclusion as when using the user cost of capital approach.

Assuming a multiplier of 1 (1.5), a drop in housing investment of about 2.6 billion euro implies a drop in GDP of 2.6 (3.9) billion euro, which in turn implies that tax revenues that smaller by about 0.9 (1.35) billion euro. Once more, this is a drop in GDP due to lower housing investment and has nothing to do with the multiplier effect that operates through disposable income.

We note that in all these calculations we have not included the effect that the WTRE-induced drop in GDP has on housing investment. The latter is much more volatile than GDP; hence, it would be reasonable to assume that its elasticity with respect to GDP is at least 1. Hence, the WTRE should have a further negative impact on housing investment that we are not capturing through its effect on the cost of capital.

If we add the drop in taxes due to the WTRE-induced drops in disposable income, real estate wealth and investment, then we come up with a total of about 2.2 billion euro and 3.3 billion euro for multiplier values of 1 and 1.5, respectively. As a reminder, actual gross receipts from the WTRE are about 2.65 billion euro. Hence, the WTRE has at best a marginal positive impact on government finances, but much more likely a considerably negative one. This is quite simply an disastrous outcome that stands in complete contrast to what policymakers were aiming for when they increased the WTRE.

Obviously, all the above calculations are approximate, given also the scope of this paper. Hence, we try to be conservative in many of our assumptions (e. g. with respect to the aggregate drop in real estate wealth due to the WTRE, the marginal propensity to consume out of real estate wealth, the multipliers corresponding to autonomous private consumption and investment that could well be much larger than 1.5, the increase due to the WTRE in the lending interest rate for housing investment, the elasticities of housing investment with respect to the user cost of capital and house prices, the neglect of the effect of the WTRE-induced drop in GDP on housing investment). Even under these conservative assumptions, however, it is very clear that the DIT should be summarily dismissed, and that the WTRE is an utterly ineffective tax from the point of view of its net impact on tax revenues.

Furthermore, there is an additional channel through which the WTRE can reduce fiscal revenue, namely by supressing tax receipts due to the freeze in the real estate market. As a result, liquidity-constrained households spend less and are unable to liquidate real estate in order to pay overdue taxes. This channel is independent of the multiplier effect; even if the multiplier were zero, tax receipts could increase (due to increased consumption and payment of overdue taxes) if the real estate market functioned normally again, thus providing households access to their savings stored in the form of real estate.

Once more, it is not easy to calculate this effect, but we will try to make an educated guess. Mitrakos et al. (2014: p. 9) calculate that the ratio of real estate transactions to the number of real estate properties (i. e. the turnover ratio) dropped from about 2.6 percent in 2007 to about 0.75 percent in 2014, i. e. a drop of about 1.85 percentage points. Let us first assume that the same drop is applied to the ratio of values, and take as given a total value of real estate of about 600 billion euro, as previously discussed. Then, if the WTRE-induced drop in turnover is equal to 0.5 percentage points out of the total drop of 1.85 percentage points, it reduces transactions by about 3 billion euro. If only 20 percent of this amount could be used to pay overdue taxes (which increase at the rate of 10–12 billion euro per year in recent years), then tax receipts would increase by another 600 million euro. One could apply similar calculations by positing another plausible percentage of these 3 billion euro in freed savings which would go toward increased consumption by liquidity-constrained households.

In addition, an increase in transactions would make it easier for property owners to repay their debts to banks, thus decreasing the need of the government to provide further support. Finally the Greek government is hoping to finance part of its debt repayment by selling assets, with a large part being real estate. A rebound in the real estate market would help the government sell its real estate for better prices. We are not able to quantify these additional two factors, but given the enormous magnitude of the non-performing loans in Greece and the large drop in real estate prices, they are likely to be quantitatively quite important.

Finally, the reinvigoration of the real estate market would make it easier for banks to decide to lend to households and firms because there would be a market for the by far most important collateral asset underlying loans. The increased lending activity would in turn increase economic activity, and thus government tax receipts. Once more, it is not possible for us to quantify this effect, but it should be economically significant, as financial intermediation is simply not feasible without a market for collateral, and an economy cannot function without financial intermediation.

The overall conclusion from the all the above is that the WTRE has been a disastrous policy failure that has devastated the Greek economy. Hence, it should be immediately abolished, as it is completely ineffective and causes considerable pain to large segments of the Greek population. Let us just look at its effect on unemployment. Using the above calculations, a multiplier of 1 (1.5) implies that the drop in a calendar year's GDP due to the drop in disposable income, real estate wealth and investment is equal to at least 6 (9) billion euro, as discussed earlier in this section. Greek GDP has dropped, in constant prices, from about 250.7 billion euro in 2007 to about 185.65 billion euro in 2014, i. e. by about 65 billion euro. Over the same period unemployment has increased by about 750,000 individuals. Hence, applying a simple proportional calculation, a drop in GDP of 6 (9) billion euro due to the WTRE results in about 69,000 (104,000) individuals losing their job a result of this tax each year. This quite simply represents an immense cost

both in human misery and in lost output, made all the more unbearable by the fact that this tax is completely ineffective in achieving its principal aim, i.e. to increase fiscal revenues.

5 Arguments in favour of the Greek WTRE

In this section we examine various arguments put forward in favour of imposing a WTRE in general, and in Greece specifically. Given that we are not privy to the internal debate among policymakers regarding the implementation of the WTRE in Greece, and that, to the best of our knowledge, they have not made public their analyses of this issue, some parts of the discussion necessarily contain an element of speculation.

We start with the argument that an advantage of the WTRE is that it is difficult to avoid, as real estate is immovable. This is indeed borne out by the fact that the Greek government has met the target of receiving about 80 percent of the assessed value of the WTRE in its coffers. However, a limited possibility of tax avoidance has little to do with whether the WTRE increases net fiscal receipts overall. In fact, as noted in Section 4, net receipts from the WTRE are likely negative due to its severely detrimental side-effects. In addition, a limited possibility of tax avoidance has nothing to do with whether the WTRE is desirable from the point of view of economic welfare. After all, there are ways to raise revenue through other taxes that are difficult to avoid (e.g. a poll tax, or a tax based on being connected to the sewage system or on having a cell phone number), but for various reasons (economic, legal and ethical) such taxes are generally not implemented. Actually, if the WTRE is detrimental to a country's economy, the fact that it cannot be avoided easily is a cause for grave concern because it implies that its deleterious effects actually take place.

In addition, the readily available tax receipts from the WTRE likely distort policymakers' views about its effectiveness and desirability. A well-known cognitive bias in decision-making is the availability heuristic (Tversky and Kahneman 1973), which states that when making a decision individuals put a lot of weight on factors that are readily observable and tend to ignore those that are less so but may still be quite relevant for the decision. Let us now think how the multiplier effect operates: there are several hundred millions of spending decision that are cancelled due to the WTRE's negative effect on disposable income, real estate wealth and investment, as well as to the lack of access to one's savings due to the freezing of the real estate market. All this foregone spending entails taxes lost to the government. One can think of this mechanism as the proverbial death by a thousand cuts. Importantly, these cancelled transactions and associated lost taxes are not readily observable by the policymakers; those who reduce their spending do not announce publicly that they have done so because of the WTRE. Hence, policymakers are likely to underestimate this WTRE-induced spending drop and focus instead only on the observed tax receipts from the WTRE; in other words, they are more likely to believe in the DIT. In order to overcome this availability bias policymakers have to go beyond observed tax receipts and think of the likely economic implications of the WTRE; unfortunately, and to the best of our knowledge, there is no indication that policymakers have done so in any systematic way.

The availability bias also makes it more difficult to understand the plight of those who are prisoners of their own real estate property. Let us consider, for example, the people who were queuing in front of banks in the summer of 2015 due to the capital controls imposed in Greece by policymakers, and whose plight received very prominent attention in the various media. Many

of these people were understandably desperate because they could not withdraw their money, even though they could make electronic payments within Greece without any issues. Let us now think about the plight of a property owner who might own a piece of real estate 20 or 50 times larger in value than the typical amount found in a bank account, and who can neither use this real estate to make any payments whatsoever (due to the frozen real estate market) nor to obtain any loan using it as a collateral. However, she may well have to pay very onerous property taxes on it, without being necessarily able to afford them. As a result, her plight is at least as serious as it is for most of those queueing outside the banks, but it is not immediately apparent to policymakers because it gathers relatively little attention in the media. It is likely known only to her family and her real estate agent.

Another argument put forward in favour of the WTRE is its presumed small welfare cost compared to other taxes. The welfare cost of any tax stems from the fact that it changes economic decisions; the smaller this change the more preferable the tax. While a WTRE does not distort the decision to work (since it is not generally related to one's income), it can seriously distort economic behaviour in several other ways: i) given that it reduces the rate of return on households' saving, it affects their saving decisions; ii) for the same reason, it affects the decision to invest in real estate. Even if taxing a piece of unoccupied land does not create a distortion, a WTRE affects the decision to build on it; iii) a WTRE makes more households liquidity-constrained, and thus it considerably changes their consumption decisions and reduces their economic welfare; iv) by decreasing the value of collateral, the WTRE changes the lending behaviour of financial institutions, thus impacting the possibility of households and entrepreneurs to borrow; v) as real estate is lumpy and indivisible, its owners do not have the ability to marginally adjust their decisions in the face of a WTRE. Given that such flexibility limits welfare losses, a WTRE is likely to be much more costly in terms of economic welfare than a tax on a perfectly divisible good.

One encounters often, however, the claim that recurrent property taxes are among the least detrimental to growth (see e. g. Johanesson et al. 2008, European Commission 2011, 2012, 2013). As far as we can tell there is no such theoretical result, especially one that is derived from of a realistic theoretical model that takes into account the considerable complications introduced by the presence of liquidity constraints, the lumpiness and irreversibility of real estate, as well as the potential market freeze due to high taxation. On the other hand there are some empirical results in Arnold (2008) and Arnold et al. (2011),[17] which suggest that increasing the role of recurrent property taxation can enhance economic growth. While Arnold (2008) offers some insights into the empirical modelling of the effects of various types of taxes on growth, one should bear in mind that results therein are based only on panel data regressions, which leave unaddressed many of the issues that hinder their causal interpretation.[18] Furthermore, Xing (2012) finds that the results in Arnold et al. (2011) are not robust to alternative specifications, and that the ranking of taxes in terms of their impact on economic output disappears completely after some crucial assumptions are relaxed. Crucially, when tested empirically, these assumptions are rejected. Moreover, the results in Xing (2012), have been corroborated by Acosta-Ormaechea and Yoo

17 Arnold et al. (2011), as well as Johanesson et al. (2008), use the methodology developed in Arnold (2008).

18 While panel regressions solve the issue of inconsistent estimation due to time-invariant unobservables, they do not solve the problems due to time-varying unobservables. Candidates for such unobservables in the context of taxes and growth abound: investor sentiment, investment incentives, political considerations, land zoning restrictions at the local level etc. Using as instrumental variables lagged values of endogenous regressors as in Arnold (2008) is unlikely to address these problems, as these regressors can affect growth for a long time.

(2012: p. 32), who find that recurrent property taxes cannot be considered as the least detrimental taxes to economic output.

Hence, to the best of our knowledge, there is currently no empirically credible ranking of taxes in terms of their effects on growth. Overall, a priori, it is not clear whether a WTRE is preferable to other taxes on either economic welfare or any other grounds. Furthermore, important factors affecting these issues (e. g. the availability of liquid savings, or the functioning of real estate and financial markets) are likely to differ across countries or different points in time, thus making conclusions likely country- and time-dependent.

Consequently, it is very difficult to understand why institutions like the European Commission repeatedly proclaim that recurrent property taxes are beneficial to growth. It is quite unjustifiable to make such strong statements, let alone to push hard for important policy changes like increases in recurrent property taxes throughout the European Union, as the European Commission has repeatedly done (see e. g. European Commission 2011: p. 5).[19] There are quite simply no unambiguous theoretical or empirical results that warrant such definite and bold positions. On the contrary, the current inconclusive state of the debate on this issue strongly points to the need to proceed with caution and implement any policy changes only incrementally, so as to be better able to gauge their effects. Hence, any policy recommendations should be guarded. In the case of Greece, however, all caution has been thrown to the wind, with policymakers implementing a radical four-fold increase in recurrent property taxes with respect to the size of the economy. Thus, it is no wonder that such ill-conceived experiments, with no solid theoretical or empirical foundations, have caused such devastation in the Greek economy.

Another argument in favour of the Greek WTRE that has been proposed in some quarters is that it retroactively taxes people who historically have evaded taxes, instead investing their spoils in real estate (rightly or wrongly, the prevalence of these people is presumed to be higher in Greece compared to most other European countries). However, this argument is completely illogical: not all real estate owners are tax dodgers, nor have all tax dodgers invested in real estate. Hence, it makes no logical sense to punish the investment good instead of the tax dodger. Importantly, this argument accepts the possibility that those who have played by the rules are punished in the same way as those who have evaded them. Thus it is a morally unacceptable argument, as it represents a form of collective punishment that has no place in modern societies. If some people living in a village have committed a crime, it would not be deemed acceptable that the police arrest all the village inhabitants in order to catch the criminals.

In a similar fashion, some claim that a big reason for the Greek debt crisis is the low amount of taxes paid by Greeks; hence, the WTRE is a legitimate way to raise tax revenue. First, as discussed in Section 4, the WTRE has only a slightly positive if not negative effect on tax revenues. Second, a rebuttal to the claim that the Greek crisis was due to weak tax collection is given by the IMF's own ex-post evaluation of the Greek stabilization program (2013: pp. 21, 23), which states:

19 The European Commission's very strong views on the alleged optimality of recurrent property taxes were once more in evidence when the Italian prime minister announced in August 2015 his government's plans to abolish property taxes on the main house (the aforementioned IMU), with the exception of very luxurious residences. The European Commission took strong exception to this policy change, through both unofficial and official channels.

> *39. More importantly, a flatter adjustment path would have required more than 110 billion euro in financing. [emphasis in the original] The Greek Stand-By Arrangement was already the highest access loan in Fund history. While the euro partners could have provided more than 80 billion euro in funding (although this was already more than 35 percent of Greek GDP), this would have been politically difficult. Debt restructuring could also have provided the authorities with some leeway, but as discussed below, this option was not politically feasible. ... 46. The adjustment mix seems revenue heavy given that the fiscal crisis was expenditure driven. [emphasis in the original] As discussed earlier, the ballooning of the fiscal deficit in the 2000s was almost entirely due to increased expenditure. The large dose of revenue measures in the Stand-By Arrangement-supported program can therefore be questioned, particularly since tax changes constituted almost half of the measures targeted for the first two years of the program.*

In other words, what led to the Greek fiscal crisis was increased expenditure and not insufficient tax collection. However, a large part of the fiscal adjustment entailed tax increases (including the WTRE) because there was neither enough financing available nor a debt haircut at the inception of the Greek stabilization program in 2010.

Importantly, the WTRE is a crucial reason why the stabilization program devised by the Troika has so clearly failed to reduce the size of Greece's public debt. As is now universally acknowledged, and as admitted by the IMF in its evaluation of the Greek stabilization program discussed above (IMF 2013), the growth rates assumed at the start of the program were quite unrealistic. To put things bluntly, they were utterly incompatible with the fiscal consolidation measures implemented during the course of the program. The enormous increase in the WTRE, a tax that achieves the unique feat of reducing tax revenues (or at best leaving them essentially unchanged), while also reducing GDP by at least 6–9 billion euro per year, goes a long way towards explaining what happened. In other words, the increased WTRE worked completely against the policymakers' objectives, as it raised considerably the public debt-to-GDP ratio, thus making the Greek public debt progressively less and less sustainable.

Policy makers have also favoured recurrent taxes on immovable property over transaction taxes, maintaining that the latter create market frictions (see e. g. European Commission 2013: p. 26). Another reason for the policymakers' interest in a liquid property market is its presumed enhancement of labour mobility. These views are in congruence with what happened in Greece: while the WTRE was dramatically increased, transaction taxes were reduced in 2014 from 12 percent-14 percent to 3 percent. However, one should always keep in mind the obvious fact that potential buyers of real estate are by definition also potential future owners, and thus weigh not only transactions taxes in their calculations, but also their future property taxes. Hence, raising the latter inordinately, as has happened in Greece, can very well negate the benefit from the reduced transaction taxes, thus driving prospective buyers away. As a result, the transaction never takes place and the market is frozen. This situation is the polar opposite of what policymakers intended when they lowered transaction taxes and increased recurrent property taxes.

The insistent focus on gross tax receipts from a WTRE without any regard to any tax shortfalls is also congruent with the mentality of someone who acts as if primarily interested in enforcing a court judgement against a delinquent borrower. In this case, there is no concern about the wider implications of any confiscatory measure on the debtor's property: the focus is squarely on how to get back as much as possible from the debtor. It is hoped that this mentality is not very strong in the Troika, as going after the property of a whole country's population is fundamentally different

from what happens in the single-debtor paradigm. The freezing of the real estate market and the significant tax losses due to the WTRE discussed in Section 4 are examples of the aggregate WTRE implications, which make it ineffective as a source of revenue.

A WTRE is also advocated in some quarters as a progressive policy measure that affects primarily the wealthy. This argument is fundamentally flawed because it overlooks the fact that income (a flow) is a concept that is totally different from wealth (a stock, created by an accumulation of savings flows and price changes). Hence, someone who over time has invested her savings primarily in real estate can be cash-poor in any given year if she has low income or no income at all, due, e. g., to unemployment. In addition, individuals have typically low incomes in old age, while having accumulated wealth during their working years. Importantly, the tension between high wealth and low income is aggravated by the freeze in the real estate market, which makes savings in the form of real estate inaccessible. To put things bluntly, it is oxymoronic to consider someone wealthy when the market for her assets has ceased to function. Finally, one should also keep in mind that, as discussed in Section 2, it is very difficult to have the WTRE payments reduced due to a low income, which makes the plight of cash-poor real estate owners all the more onerous.

There is also a perception that high real estate taxes affect relatively few individuals, given the very pronounced progressivity of the WTRE discussed in Section 2. However, a frozen real estate market has implications for the whole economy, given the crucial importance of real estate as a vehicle for saving, investment and collateral. It is simply not possible to contain the implications of the annihilation of the market of the most important material asset in any economy to a small set of individuals. The fact that the WTRE has aggravated the Greek crisis implies that it is the economically weakest who suffer the most, as is the case in virtually all economic downturns. Furthermore, the concentration of the distribution of liquid wealth at the top is much higher than that of real estate wealth, both in Greece and in all other countries for which micro data are available. This implies that low net worth households are, compared to their high net worth counterparts, much more likely to be liquidity-constrained, thus urgently needing access to their savings in the form of real estate. As a result, also these households are very negatively affected by the real estate market freeze.

The severe negative implications of the WTRE on the economically disadvantaged, even when they own little or no real estate, can be easily understood if one considers its devastating effect on the labour market. As already discussed, the WTRE increases unemployment by at least 70,000–100,000 individuals each year. In Greece, as is the case in most industrialized countries, unemployment hits especially hard those who are less educated,[20] and thus much more likely to be at an economic disadvantage. Hence, we can easily see how short-sighted it is to focus only on who pays the WTRE when considering the overall burden of this tax on the Greek economy.

Interestingly, there is a perception that real estate investment is outdated, especially when compared to the much needed investment in new technologies. According to this view, the essential extinction of housing investment in Greece (as discussed in Section 4) should be of no major concern. It is difficult to agree with this view: all advanced economies devote a substantial part of their private investment to housing, and there is no reason why Greece should be such a large ex-

20 The unemployment rate in Greece in the 3d quarter of 2015 was 13.2 percent for those with postgraduate studies, 20.6 percent for those holding a university degree, 25.5 percent for those with a high school education, and 33.3 percent for those who have not finished primary school (HSA 2015b).

ception, to the extent that its housing investment is currently equal to a startlingly low 1.1 percent of GDP. In addition, if policymakers are keen on convincing households to invest their savings in vehicles other than real estate, they need to work hard towards making Greek banks, government bonds and financial markets trustworthy; this is clearly not true, not now, not over long periods in the past. Hence, it is no wonder that Greek householders, with critical skin in the game—namely the welfare of their families—have historically preferred investing in real estate. Thus it is utterly unfair and unjustifiable to punish them retroactively for being careful with their investments.

Finally, some proponents of the WTRE claim that real estate is taxed everywhere, so Greece should be no exception. The confusion here stems from the fact that, as discussed in Section 2, the WTRE has nothing to do with local real estate taxes, but is rather a pure tax on wealth. Importantly, wealth taxes have been progressively abolished in most countries due to various implementation and fairness considerations, including Germany where the Constitutional Court declared them unconstitutional.

6 Conclusions

The WTRE was dramatically increased during the Greek crisis with the aim of increasing government revenues. It has most likely miserably failed in this aim, while causing a large drop in GDP, and, consequently, a prolongation of the recession. In addition, it has a tremendous human cost, with 70,000 to 100,000 people forced into unemployment each year, while contributing to a freeze in the real estate market that has blocked access to the accumulated savings of many generations. Moreover, the WTRE significantly hinders financial intermediation because the real estate market freeze to which it contributed implies that there is no market for the primary collateral underlying loans.

Reasons for such a dreadful policy failure include the misplaced emphasis on gross tax receipts, the failure to take into account the aggregate implications of a tax on the most important asset that exists in all modern societies, the overestimation of the advantages of the captive tax base that real estate represents, the lack of understanding of the importance of liquidity in households' finances, of the overwhelming importance of real estate in household balance sheets, as well as the complications that the indivisibility of real estate creates when trying to liquidate it and thus access the savings that it embodies. One should also add a misplaced belief in the fairness of a WTRE (due in part to the confusion of concepts as different as income and wealth), and the totally misguided view that most of the problems of heavy real estate taxation can be loaded on the backs of relatively few households through a steeply progressive property tax schedule.

Given the essentially complete failure of the WTRE to increase tax revenues and its considerable cost, both in terms of lost jobs and economic output, this tax should be abolished immediately. This recommendation may sound radical to those targeting only gross tax receipts, but should be much more acceptable to economists worrying about the aggregate implications of a tax on a country's economy, and thus focuses on net instead of gross tax receipts. If policymakers are hesitant to completely abolish the WTRE, then they should at the very least drastically reduce it, and, crucially, also curtail its extreme progressivity that scares away many potential real estate investors.

Greece's greatest need right now is investment, and real estate should be one of its components, especially since it has fallen to astonishingly low levels that are simply not encountered in advanced economies. However, investors need to be treated fairly with respect to taxation. This implies that policymakers—and all major political parties—must commit to reducing wealth taxes and keeping them stable for the medium term at least, as well as to ruling out any radical policy changes similar to the quadrupling of the WTRE as a percentage of GDP. Importantly, investors also need to be reassured that the rule of law will be respected, in contrast to what is currently happening with the policymakers' refusal to adjust cadastral values to reflect the much lower actual ones. If investors are not convinced that the commitment to a fair treatment and reasonable and predictable taxation is genuine, they are not going to invest in Greece, not in real estate, not in anything else.

It is crucial to keep in mind, however, that trust is a very valuable intangible good that is easily and quickly lost but only regained with considerable effort and much time. Regrettably, it is fair to say that the policymakers' actions have violently breached the trust of both actual and potential real estate investors. Consequently, it will take extraordinary commitments from policymakers to restore this trust.

Finally, what has been most striking throughout the whole saga of the WTRE is the fact that policymakers have very little idea about what is going on in the Greek real estate market, as clearly demonstrated by the debacle of the capital gains tax. Most worryingly, there is no indication that they have realized that the real estate market freeze is a pressing emergency, and that increasing taxes four-fold during such an emergency is just about the last thing that one should do. Furthermore, they seem not to have understood the importance of a liquid real estate market, whether as a much-needed boost in aggregate demand in a depressed economy, for the alleviation of liquidity constraints, or for the smooth operation of financial intermediation. To the best of our knowledge, there is no documentation that policymakers have discussed any of issues related to, e. g. the multiplier effect of a discretionary tax like the WTRE, the effect of the WTRE on consumption out of real estate wealth, or of the unpaid household debts and taxes and the impaired financial intermediation that a frozen real estate market induces. Importantly, there is no indication that policymakers consider the state of the market as an indicator of policy effectiveness, fiscal or otherwise. This goes completely against both policymakers' alleged faith in markets as the best vehicle to allocate resources as well as plain common sense. Unless policymakers start to use their common sense and pay attention to what the unprecedented freeze of the Greek real estate market implies for the economy, there is no hope that the latter will recover any time soon. Unfortunately, such a pessimistic outlook is warranted due to the simple fact that it is impossible for a modern economy to function well without a reasonably liquid real estate market, which allows real estate to fulfil its crucially important role as a vehicle for saving, investment, and loan collateral.

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