Instructions T-F

# Welcome to the lab

Welcome to the lab, and thank you for participating in today’s experiment.

Please place all your personal belongings away and switch off your phones and other mobile devices so we can have your complete attention. DO NOT socialize or talk during the experiment.

It is very important that you do not touch the computer until you are instructed to do so. When you are told to use the computer, please use it only as instructed. In particular, do not attempt to browse the web or use programs unrelated to the experiment.

# The Experiment

The experiment you participate in today is an experiment in spatial planning, where you and other participants determine whether a Project gets developed or not. At the end of the experiment, you are paid for your participation in cash. Each of you may earn different amounts. The amount you earn depends on your decisions, chance, and others’ decisions.

You will be using the computer for the entire experiment, and all interaction between you and others will be through computer terminals. You will interact anonymously and your decisions will only be stored together with your random ID number. Your name will not be made public, neither today nor in the future.

# Computer Instruction

We, the experimenters, and the participants will go through these instructions very slowly and it is important that you follow them. If you have any questions, raise your hand and your question will be answered so everyone can hear. Again, please do not hit any keys until you are told to do so.

# Overview of the experiment

At the start of the experiment, each of you will be randomly assigned a role, you will be a developer, owner, or speculator. All roles remain the same throughout today’s experiment; so if you are an owner in round 1, you remain an owner throughout the experiment. In this experiment, you will play 6 rounds; the first round is a practice round. Your performance in the remaining 5 rounds will determine your pay. One of those rounds will be picked at random to determine your payment.

In every round, all players will decide on the development of a plot of land owned by the developer via a set procedure. The players either implement a Project, or no Project is implemented. The project decreases the value of all the land owners by different values, as well as increases the value of the developer. Both the value of the land with a Project and the value of the land with No Project are randomly drawn for each owner and the developer in each round.

The developer and the owners pay taxes to the tax authority, as a proportion of the value they declare their property to be worth. All players in the experiment own shares in the tax revenue earned by the tax authority: the developer gets 30 shares, an owner gets 6 shares and a speculator gets 5 shares. A total of 90 tax shares are circulating among the players. During the experiment, there is a market where players can buy and sell those tax shares. The value of a tax share is equal to 1/100th of the TOTAL tax revenue raised after the second declaration (see stage “Final Declaration” below).

Players earn points for (1) each tax share they own at the end of the round, (2) the cash balance not used to buy shares, (3) the gain or loss due to land speculations, and (4) the value of their plot of land given the choice on the project if they are developer or owner.

**Below we explain the stages of the experiment in detail.**

## Phase: “Presentation”

All computer screens have some common elements that we will briefly explain here. The blue bar (see item 1) at the top shows your role in the experiment at the far left and some information about the current state of the round. At the far right, you can see the round and phase of the experiment. Every phase has a time limit, a clock is shown next to the round and phase indication.

Area 2 shows the layout of the land. Your own role and plot of land are highlighted in blue in this area. All owners and the developer have a value for their plot of land that depends on whether or not the project is developed. These values are randomly drawn from a uniform distribution in every round. Area 3 shows the value ranges from which the actual values for all players are drawn, for each role the minimum and maximum values are indicated. Note that these values can vary from round to round, but the value range from which these are drawn will remain the same during the session today.

You can see the values used in your session on your computer screen throughout the experiment. Note that in each round the project is either developed or not. If the project is developed, each player receives the value of their land with the Project at the end of the round. If the group decides not to develop the land, each player receives the value of their land under the No Project condition at the end of the round.

Area 4 (see figure) shows you, your private values for your property when the project is not developed (No Project) and when the project is developed (Project). These values are shown privately for the developer and the 5 property owners. In the next phase, the owners and developer will declare their value for their property under the \*No Project\* and \*Project\* outcomes. The speculators don’t own any property and therefore don’t see these values.

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## Phase: “Declaration”

The next phase starts: The Owners and the Developer are asked to submit their initial declaration of the value for their plot of land, for BOTH the \*No Project\* and \*Project outcome\*; this is done in area 5 (see figure below). The value of the land for each player depends on whether the project is implemented or not. Therefore the owners and developer are asked to submit two values; one for when the project is not implemented and one for when the project is implemented. Declarations are only submitted once you push the blue button and confirm your choice. If you don’t submit your values, the lowest possible value from the range ‘No Project’ (see area 3), will be filled in as the declaration for ‘No Project’, and similarly for the ‘Project’ condition.

Each owner and the developer can only submit their first declaration once per round; repeat submissions are ignored. Owners and the developer pay a tax equal to 1% (see Area 5; tax bill) of their initial declared value under the development condition that is ultimately chosen. Hence, IF the project is implemented owners and developers pay 1% of their initial declaration under the ‘Project’ condition, but do not pay a tax over their declaration under the “No Project” condition. In area 5 you see how much you pay taxes if you fill in the declaration box.

In area 5 you also see \*value percentile\*, which tells you what percentage of possible drawn values (for the properties) from the uniform distribution is below your declaration. This information is also shown to the speculators in the next phase.

The next phase starts when (1 ) all owners have submitted their values, or (2) the timer in the top right-hand corner has run out.

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## Phase: “Speculation”

In this phase, ‘Speculators’ can choose to ‘buy’ one or more of the plots of land from the owners and developer in each of the two possible conditions. They can do so by clicking the preferred plot(s) of land in Area 6 (see Figure). Speculators see both the declared value (number in each plot outside of the brackets) and the \*value percentile\* (the percentage between brackets) for each plot of land in each condition. The percentile shows what percentage of possible values for this plot of land is below the owner’s declaration. The choice to buy properties of land is registered after you select the plots, click the blue submit button, and confirm your choice.

If a speculator buys a plot of land, they pay a price equal to the initial declaration of the respective plot owner under the chosen condition. This price is received by the owner or developer of that plot of land. Plots of land are sold back to their original owners at the average of the ‘real value’ to the owners and the declaration of the owner automatically. Speculators thus receive half of the difference between this ‘real value’ and the initial declaration for every plot they bought. If several speculators buy the same plot in a round, they share this value. The owners and developer thus pay half of the difference between their real valuation and declaration, when their plot is bought. In short, as a speculator, you lose value if you buy a property where the owner or developer declared a higher value than their real value. In turn, as a speculator, you earn value if you buy a property where the owner or developer declared a lower value than their real value.

The next phase starts when (1 ) all speculators have submitted their buy requests, or (2) the timer in the top right-hand corner has run out. As a speculator, you will neither earn nor lose points if you choose not to buy any property under the chosen condition.

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## Phase: “ Market”

At this point, all players will participate in two markets where shares can be traded (see the figure). Each player has the same number of shares in each of the two markets; the developer has 30 shares, each of the 5 owners has 6 shares and each of the 6 speculators has 5 shares. There are a total of 90 shares that can be traded in each market.

After the market, the experiment determines the development condition chosen. IMPORTANT: The development chosen (‘No Project’ or ‘Project’) is based on the ‘median price’ of the last 7 trades (‘contracts’) in both markets (see areas 8). The highest ‘median price’ of the two markets will determine what development is chosen when the ‘timer’ runs out. During the trading, you will see which development would win based on the current share prices (see figure; the market with a yellow rectangle around it has the highest median price at that point, in this example the ‘Project’ condition is selected).

After this phase, the experiment asks the developer and owners to make a final declaration for the value of their plot of land with the chosen condition (Project or No Project). The computer then levies a tax of 33% of this declaration, and another round of speculations follows. Each share in the selected condition has a value equal to 1/100 of the total Tax Income based on the final declarations in the next phase of the experiment. The cash balance in the market under the chosen condition is also added to each participant's points.

Note: shares and cash in the market of the condition that is not chosen are not added to the participant's points.

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To give all players an idea of what the share price might be worth in each market; the computer gives two signals of the value of a tax share in that round, for both the ‘Project’ or ‘No Project’ Condition.

All players see the \*same\* public signal of the value of the tax shares for each market. This value is based on the \*initial declarations\* made by the owners and developer. If the owners and developers all declare the \*REAL\* value of their properties, the public signal perfectly predicts the share price in the market. If they do not declare their \*REAL\* value, the public signal will be off proportionally to the degree the owners don’t declare their \*REAL\* values.

Each player also gets a private signal about the value of the share in each market. The private signal is a noisy signal of the true value of the plot of land in the chosen condition. The private signal is determined by the value of the tax shares when all players declare their \*REAL VALUES\* + an error term. The error term is drawn randomly and individually for each player and is between 5% below or 5% above the average of these \*REAL\* values over the experiment.

Both the private and public signals are shown in Area 9 in the figure.

## Trading

In the Market phase, all players can create offers to sell or buy a tax share in each of the two markets. Both markets work the same. Offers are made by listing the price players want to receive or pay for a share and then pressing the ‘ask’ (for selling) or ‘bid’ (for buying) button. The ‘asks’ can be done in area 10 (see figure) by typing in the value you would like to receive for the share in that market and pushing the blue ‘Ask’ button. The ‘bids’ can be done in area 11, by typing the value you offer to pay for a share and pressing the blue ‘Bid’ button.

Each of these offers is an offer to buy or sell a single share. You can accept an offer to buy or sell a share at the listed price by clicking the “Buy @” or “Sell @” buttons in Area 12. If several offers to buy or sell a share are available, the computer automatically orders them based on price. A player that accepts an offer automatically receives the highest available offer when selling a share, and pays the lowest available asking price when buying a share. So you automatically receive the best offer available on the market at that time.

Offers that you made are marked with an \*. You can remove an offer that has not been accepted yet by pressing the “Remove Ask” or “Remove Bid” button.

You can see the amount of cash and shares that you have available in the areas without a number at any time.

REMEMBER: that there are two markets trading in shares in tax revenue: (1) shares in tax revenue if \*the Project\* gets implemented, and (2) shares in tax revenue if \*NO Project\* gets implemented.

**Again IMPORTANT:** The market that has the highest ‘median’ share price of the last 7 trades when the timer runs out will determine whether the project is developed or not. During the market, the selected condition is indicated in the yellow box.

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## Phase: Final Declaration

In the Final declaration phase, the Owners and developers are asked to submit their final declaration of the value of their property in Area 13 (see figure below). Note that owners now only have to declare their valuation for the development that took place, so if the project is implemented they declare the value of their land with the project, if the project is not implemented they declare their value for ‘no project’.

In the figure, you see the ‘no project’ is chosen in the earlier declaration phase (yellow band). The values declared here can be different from the initial declarations. You will see the declaration you have made in the initial declaration in area 13. There you can change that value if you wish to do so. Declarations are only submitted once you push the blue button and confirm your choice. If you don’t submit your value, the lowest possible value from the range of the chosen condition (‘No Project’ in this example) will be filled in as the declaration.

Please note that taxes are substantially higher here: Owners and developers pay 33% of their declared value as a tax in this declaration phase.

In area 14 you will see if speculators bought your property based on the first declaration, and what the result is of that transaction.

The next phase starts when (1 ) all owners have submitted their values, or (2) the timer in the top right-hand corner has run out.A screenshot of a computer

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## Phase: “Final Speculation”

The final speculation repeats the first declaration. Speculators’ can choose to ‘buy’ one or more of the plots of land from the owners and developer. Speculators see both the declared value (number in each plot outside of the brackets), and the \*value percentile\* (the percentage between brackets) for each plot of land. The percentile shows what percentage of possible values for this plot of land is below the owner’s declaration. The choice to buy properties of land is registered after you select the plots, click the blue submit button, and confirm your choice.

If a speculator buys a plot of land, they pay a price equal to the initial declaration of the respective plot owner under the chosen condition. This price is received by the owner or developer of that plot of land. Plots of land are sold back to their original owners at the average of the ‘real value’ to the owners and the declaration of the owner automatically. Speculators thus receive half of the difference between this ‘real value’ and the initial declaration for every plot they bought. If several speculators buy the same plot in a round, they share this value. The owners and developer thus pay half of the difference between their real valuation and declaration, when their plot is bought. In short, as a speculator, you lose value if you buy a property where the owner or developer declared a higher value than their real value. In turn, as a speculator, you earn value if you buy a property where the owner or developer declared a lower value than their real value.

The next phase starts when (1) all speculators have submitted their buy requests, or (2) the timer in the top-right hand corner has run out. As a speculator, you will neither earn nor lose points if you choose not to buy any property under the chosen condition.

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## Phase: “Results”

Once the final “Speculation” phase is done, the computer collects the tax revenue and the owners of tax shares receive their share of the tax revenue and remaining trading cash for the chosen condition. Players are shown their results for the round they just played, a new round starts after the timer runs out. All players can see the points they earned in each phase, as well as the final “total earnings” in that round, in area 16.

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After the “results” phase the game moves on to the next round. In total, there are 6 rounds, including the first practice round which does not count toward your final payment. From the last 5 rounds that are eligible for payment, one will be chosen at random.

## Phase: “Final Results”

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On the final results page (after the experiment is done), the amount you earned in “points”, as well as the “final Euro Amount” (Area 17) will be shown. The final Euro amount is calculated by taking the points earned + base points that depend on your role and dividing this by a fixed exchange rate that depends on your role. The show-up fee is added to this total to make your payment. The experimenters will call the payment token (Area 18), and you will receive your payment.

Base points and exchange rates used in this session are the following:

1. owners get 200.000 basepoints with an exchange rate of 20.000,
2. speculators get 400.000 basepoints with an exchange rate of 20.000
3. the developer gets 0 basepoints with an exchange rate of 50.000

## Login Instructions

You will now be asked to pick an envelope in which you will find the number of the computer where you will sit.

Once seated, log in with your student account, open the Edge browser and type in the following: <https://yary.eu/lobby>