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\* Views expressed are those of the authors and do not necessarily reflect official positions of De Nederlandsche Bank.

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# Will helicopter money be spent? New evidence\*

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## Abstract

According to some economists, central banks should use ‘helicopter money’ (monetary financing of government expenditure or transfers to households) to boost inflation (expectations). Based on a survey among Dutch households, we examine whether respondents intend to spend the money received via such a transfer. Our findings suggest that only a small part of transfers will be spent and that such a transfer will hardly affect inflation expectations. Furthermore, whether transfers come from the central bank or the government hardly makes any difference. Finally, our results suggest that using helicopter money would have mixed consequences for public trust in the ECB.

**Keywords:** Helicopter money, central banking, ECB, trust, unconventional monetary policy.

**JEL classifications:** E52, E58, D14.

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## 1. Introduction

At the end of 2014 inflation in the euro area dropped below zero; since then, inflation has been persistently low. Average headline (core) inflation over the last twelve months until October 2016 amounts to 0.12% (0.86%), well below the European Central Bank's (ECB) aim for price stability (i.e. an inflation rate in the medium term of below but close to 2 percent). Furthermore, market-based long-term inflation expectations became less well anchored and started drifting away from this target (see de Haan *et al.*, 2016 for a discussion).

In January 2015, the Governing Council of the European Central Bank therefore decided to launch the expanded asset purchase program (EAPP), better known as quantitative easing (QE). Under this program, each month public and private sector securities will be purchased up to €60 billion. Initially, it was announced that the program would run until end-September 2016, but at its December 2015 meeting the ECB's Governing Council decided to extend it until March 2017. During the meeting of March 2016 the Council decided to expand the EAPP with €20 billion each month, bringing the monthly purchases to €80 billion. In addition, bonds of investment-grade non-financial corporations will be purchased. After the ECB's Governing Council Meeting of December 2016 it was announced that the EAPP will be extended until the end of 2017. During this period the monthly asset purchase will equal €60 billion. Although it is too early to tell, several observers have expressed doubts that the ECB's QE will achieve the desired sustained adjustment of inflation (expectations) in line with the ECB's aim for price stability.

Some economists have therefore suggested the ECB to use 'helicopter money', i.e. the monetary financing of government expenditure or transfers to households.<sup>1</sup> According to Borio *et al.* (2016), "helicopter money is best regarded as an increase in economic agents' nominal purchasing power in the form of a permanent addition to their money balances. Functionally, this is equivalent to an

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<sup>1</sup> See, for instance, Buiters (2014), Turner (2015) and Bernanke (2016). See also Reichlin *et al.* (2013) and Karakas (2016) for overviews. Peter Praet, a member of the ECB's Governing Council, recently noted, "All central banks can do it. The question is, if and when is it opportune." According to Clarida, "We will see a variant of helicopter money (perhaps thinly disguised) in the next 10 years if not the next five." (both cited in Ipp, 2016).

increase in the government deficit financed by a corresponding permanent increase in non-interest bearing central bank liabilities.”

In a hearing in the European Parliament, ECB President Draghi said: “It's a very interesting concept that is now being discussed by academic economists and in various environments. But we haven't really studied yet the concept. Prima facie, it clearly involves complexities, both accounting-wise and legal-wise, for our view, but of course by this term "helicopter money" one may mean many different things, and so we have to see that.” The purpose of our paper is to examine whether one form of helicopter money (a transfer to households) will affect private consumption and raise inflation expectations.

Several proposals have been put forward how helicopter money can be created. Muellbauer (2014) suggests providing “all workers and pensioners with social-security numbers (or the local equivalent) with a payment from the ECB”. In his view, it is to be preferred that the ECB is responsible instead of the government: “There is an important difference between the ECB implementing a €500 per-adult-citizen hand-out as part of monetary policy and governments doing this as traditional fiscal policy. Economists have long worried about myopic politicians over-spending, for example, just before an election in order to influence the voters and thus creating a ‘political’ business cycle, or simply perpetually spending too much, and as a result running too high government deficits. That is an important reason why the ECB is not allowed to directly finance government spending. But it is quite a different matter for an independent central bank ... to directly hand out cash to households as part of its method of meeting its inflation mandate.”

There is a major difference between QE and transfers financed by the central bank. The transmission of QE to the real economy is indirect, i.e. it runs via financial markets and institutions. In contrast, transfers into people's accounts would directly influence private sector agents' spending capacity rather than hoping for a trickle-down effect from financial markets and institutions. Furthermore, it would be targeted to people having a higher marginal propensity to spend than the wealthy owning the assets whose prices are boosted by QE (Muellbauer, 2014).

However, a crucial question is whether such a central bank financed transfer will, in fact, lead to higher consumer spending and therefore—via its effects on aggregate demand—to higher inflation (expectations). As households are currently highly leveraged in several countries in the euro area, they might decide to use the money received to improve their net asset position. Furthermore, if consumers are Ricardian and do not consider the transfer as permanent (see section 2), they might decide to increase savings.<sup>2</sup>

We shed some light on these issues by asking a large panel of Dutch households what they would do with the money received, i.e. whether they would spend it or save it. To examine whether the amount of the transfer matters, we ask this question for two amounts, namely €500 and €2000. In addition, we test whether it makes a difference whether the money will be distributed by the ECB or national governments as suggested by Muellbauer (2014). Moreover, we investigate the impact of helicopter money and QE on inflation expectations and trust in the ECB.

Our results suggest that only a small part of transfers will actually be spent. Furthermore, whether the transfers come from the ECB or the government hardly makes any difference, in contrast to the claim by Muellbauer (2014). Furthermore, we find that the impact of money transfers on inflation expectations is limited as well. Moreover, our results suggest that helicopter money has mixed consequences for public trust in the ECB.

The remainder of the paper is structured as follows. Section 2 compares the impact of QE and helicopter money on the real economy; it also reviews evidence that may be relevant in assessing whether helicopter money may work. Section 3 outlines the survey and section 4 presents and discusses the outcomes of our survey. Section 5 concludes.

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<sup>2</sup> According to Barro (1974), a tax reduction (or transfer) will not lead to higher consumption as consumers realise that taxes will have to be raised at some point in the future to pay off the government debt used to finance the tax cut (or transfer). As consumers' intertemporal budget constraint will not change, households will not increase consumption in response to lower taxes (or transfers). However, most empirical evidence does not provide strong support for Ricardian equivalence (see Stanley, 1998 for a meta-analysis and Muellbauer, 2016 for further discussion on the importance of liquidity constraints and other reasons why Ricardian equivalence will not hold). Using a survey among a representative sample of German households, Hayo and Neumeier (2016) recently concluded that only 7% of their respondents report that they save more in response to public debt accumulation.

## 2. QE versus helicopter money<sup>3</sup>

Although most evidence, which mostly refers to the US, suggests that financial markets were affected in the intended direction by central banks' asset purchase programs (see Blinder *et al.*, 2016 and de Haan and Sturm, 2016)<sup>4</sup>, this does not necessarily imply that these unconventional policies have been able to increase inflation or inflation expectations. Indeed, several Fed policymakers, have noted that the transmission channels of QE to the real economy are not well understood and that estimates are subject to substantial uncertainty (cf. Rosengren, 2015 and Williams, 2014).<sup>5</sup> Also Turner (2015) notes that "the transmission mechanism via induced asset prices, wealth effects and Tobin's Q effects, is indirect, uncertain and contingent on multiple factors. The effect of QE may therefore prove weak, particularly if there are strong countervailing forces deriving from a large debt overhang, attempted private deleveraging and a general lack of confidence." Some have gone further. For instance, Williamson (2015) argues that "casual evidence suggests that QE has been ineffective in increasing inflation." In a 2013 Wall Street Journal op-ed, a former Fed official went as far as apologizing for QE, arguing that it had benefited Wall Street rather than Main Street (Huszar, 2013).

And even if QE may have 'worked' for the US, some arguments have been raised why this may be less obvious for the euro area. First, the impact of asset purchase programs may differ depending on economic settings, such as the steepness of the yield curve at the time when the program is announced (Blinder

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<sup>3</sup> The first part of this section heavily draws on Blinder *et al.* (2016) and de Haan and Sturm (2016).

<sup>4</sup> Altavilla *et al.* (2015) report that the ECB's QE has significantly lowered yields for a broad set of market segments, with effects that generally rise with maturity and riskiness of assets. For instance, long-term sovereign bonds yields declined by about 30-50 basis points at the 10-year maturity and by roughly twice as much in higher-yield member countries such as Italy and Spain. Andrade *et al.* (2016) find that the announcement of the ECB's purchases program reduced sovereign yields on long-term bonds while also raising share prices of banks that held more sovereign bonds in their portfolio.

<sup>5</sup> For instance, based on a DSGE model with segmented markets, Chen *et al.* (2012) report that asset purchase programs in the US had a very small impact on inflation (a rise 0.03 percentage points). In contrast, Chung *et al.* (2012), using simulations of the Federal Reserve's FRBUS model, report that these programs raised inflation by 0.4-1.0 percentage points. Engen *et al.* (2015) find a peak effect on inflation of 0.5 percentage points. Their analysis is also based on simulations of the Fed's macroeconomic FRBUS model. Using simulations from a large Bayesian VAR-model, Churm *et al.* (2015) conclude that the second round of purchases by the Bank of England increased inflation by at most 0.6 percentage points. Wieladek and Pascual (2016) examine the real effects of the ECB's QE and conclude that in absence of the first round of QE, real GDP and core CPI in the euro area would have been 1.3%-points and 0.9%-points lower, respectively. The effect is roughly 2/3 times smaller than those of asset purchase programs in the UK and the US.

*et al.*, 2016). Note that when the ECB decided to introduce QE, the yield curve was already fairly flat due to previous ECB unconventional policies.

Second, Muellbauer (2014) argues that due to financial system differences between the US and the euro area, QE in the euro area may be less effective than it has been in the US. For instance, in Germany, and to a lesser extent in France, the total liquid asset holdings of households are far larger than total household debt. When lower policy rates translate into lower deposit rates this reduces total household spending. Furthermore, households in the euro area hold far less equity relative to income than US households, so that the uplift on consumer spending from higher stock markets is small compared to that in the US. According to Muellbauer (2014), also higher house prices in France and Germany reduce total consumer spending as “higher house prices spur non-owners to save more for the mortgage down payment and inspire caution among tenants, who expect future rent hikes”. In addition, Muellbauer (2014) argues that with respect to credit provision “capital markets do far less of the heavy lifting in the Eurozone (where banks matter more) than in the US. As a result, bringing down yields on government, corporate, and asset-backed bonds has less impact.” Finally, in countries with large pension funds like the Netherlands, low bond yields increase measured pension-fund deficits, causing pension funds to raise contribution rates and limit pension benefits, which may impede higher consumer spending.

In a speech in November 2002, former chairman of the Federal Reserve, Ben Bernanke, suggested helicopter money as one means to boost the economy. Proponents of helicopter money<sup>6</sup> argue that if a central bank wants to raise inflation and output in an economy that is running substantially below potential, one of the most effective tools would be simply to give everyone direct money transfers. In theory, people would see this as a permanent one-off expansion of the amount of money in circulation and would spend it, thereby increasing economic activity and helping to push inflation back up to the central bank’s target.

According to Buiter (2014), a helicopter drop of money is a permanent and

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<sup>6</sup> Friedman (1969, pp. 4-5) introduced the term helicopter money: “Let us suppose now that one day a helicopter flies over this community and drops an additional \$1000 in bills from the sky, ... Let us suppose further that everyone is convinced that this is a unique event which will never be repeated...”.

irreversible increase in the nominal stock of fiat base money in contrast to QE. However, a helicopter drop may imply that central banks' dividends paid to the government will be reduced or that the government has to transfer money to the central bank to cover episodes of negative net income (Reis, 2015).<sup>7</sup> Under those circumstances, helicopter-money-financed transfers may not be as permanent as suggested by its proponents. And to the extent that consumers are Ricardian, the transfer may then not lead to higher private consumption.

Proponents of helicopter money argue that it will boost demand (Muellbauer, 2014)<sup>8</sup>, even if existing government debt is already high and/or interest rates are zero or negative (Bernanke, 2016). Bernanke (2016) identifies four channels through which helicopter money would stimulate demand: 1. the direct effects of the public works spending on GDP, jobs, and income in case government spending is financed by money creation; 2. the increase in household income, which should induce greater consumer spending in case helicopter money takes the form of a transfer to households; 3. a temporary increase in expected inflation due to the increase in the money supply, which in turn should incentivise spending; and 4. unlike debt-financed fiscal programs, a money-financed program does not increase future tax burdens and so should provide a greater impetus to household spending than expansionary fiscal policy financed by government debt. However, the extent to which these effects materialise is an empirical question.

Will helicopter money in the form of transfers to households work? Due to lack of prior use of the policy instrument, proponents often refer to related experiences with tax rebates in the US in 2001 and 2008 and Australia in 2009. Johnson *et al.* (2006) report that between 20 and 40 percent of the 2001 US rebate was spent in the quarter in which the cash was received—and about another third in the quarter afterwards. In their study of the 2008 US rebate Parker *et al.* (2013)

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<sup>7</sup> According to Hall and Reis (2015), a central bank will remain solvent if in every period it calculates its net income, marking assets to market, and rebate it in full to the fiscal authority if it is positive, or receive a transfer in this amount from the fiscal authority if it is negative.

<sup>8</sup> Buiter (2014) employs a continuous-time Yaari-Blanchard version of the overlapping generations model to characterise household behaviour. This model includes the conventional (infinite-lived) representative agent model as a special case (when the birth rate is zero). With a positive birth rate, there is no Ricardian equivalence or debt neutrality, while under a zero birth rate there is Ricardian equivalence. Buiter (2014) argues that helicopter money drops boost household demand. Likewise, Gali (2014) concludes that “under a realistic calibration of [wage and price] rigidities, money financed fiscal stimulus is shown to have very strong effects on economic activity with relatively mild inflationary consequences.”

conclude that households spent 12-30 percent (depending on the specification) of their payments on nondurable goods during the three-month in which payments were received, and a significant amount more on durable goods, primarily vehicles, bringing the total response to 50-90 percent of the payments. Similarly, in an analysis of the 2008 US rebate using AC Nielsen Homescan data, Broda and Parker (2008) find a first-quarter marginal propensity to consume (MPC) of about 0.6 and a two-quarter MPC of about 1.

In his study of the Australian 2008/09 tax rebate, called a 'bonus', Leigh (2012) reports that forty percent of households who said that they received a payment reported having spent it, while 24 percent indicated they had saved the money and almost 36 per cent used it to pay off debt.

As Muellbauer (2014) points out, this evidence contradicts simple textbook versions of the permanent income hypothesis of consumption. Referring to some of his previous work (Aron *et al.*, 2012; Chauvin and Muellbauer, 2013), he concludes that "between 40 and 60 percent of a surprise transfer of €500 would be spent fairly quickly." He also argues that this percentage will depend on the net-asset position of households. For instance, liquidity constrained households tend to have higher propensities to consume in response to income shocks (Jappelli and Pistaferri, 2010; Kaplan and Violante, 2014). This would suggest that the spending impact will be less in Germany, where many households already have a lot in their saving accounts, but in Spain, Portugal, and Greece, where many households are perhaps more liquidity-constrained, the effects would be larger. Recently, D'Acunto *et al.* (2016) examined how German households reacted when the German government announced in November 2005 an unexpected 3-percentage-point increase in value-added tax (VAT) that would become effective in 2007. Using a representative survey of about 2,000 German households, the authors find that this shock increased households' inflation expectations during 2006 and actual inflation in 2007. Households' willingness to purchase durables increased by 34% after the shock, compared to before and to matched households in other European countries that were not exposed to the VAT shock.

### **3. The survey**

To investigate the willingness of consumers to spend helicopter money, we have

designed a survey. This survey has been fielded among the members of the CentERpanel. The CentERpanel is an internet panel run by CentERdata, a survey research institute affiliated with Tilburg University. The composition of the panel is representative of the Dutch-speaking population. Panel members are recruited via traditional communication channels (mail, telephone or house visits). Once participants confirm their willingness to participate in the panel, they are explained that that surveys are done via the internet and that participants without internet access are granted access by CentERdata. As there is no intervention of an interviewer, respondents can answer questions at their own pace and convenience.

Annually, panel members complete six survey modules on work, income, health, assets and debt, and economic and psychological savings concepts. This longitudinal dataset, known as the DNB Household Survey (DHS), provides a rich set of background information on panel members. In addition to the annual surveys, participants in the CentERpanel regularly complete ad hoc surveys on a variety of topics designed by researchers for specific research projects. Data collected via the CentERpanel have been used in several studies such as Van Rooij *et al.* (2011, 2012), Van der Crujisen *et al.* (2012, 2013, 2015, 2016).

From 13 until 24 May 2016, our questionnaire was offered to all panel members aged eighteen and older. Compared to traditional surveys conducted by telephone or mail, the response rate to surveys in this Internet household panel survey is usually quite high. In our case, 2223 out of 2848 respondents completed the survey which gives a response rate of 78.1 percent.

We merge the data from our survey with information from the 2015 DHS modules. This enables a more extensive analysis of the survey data, but note that the number of observations for these additional variables is about 400 less than for our survey, because there is not a one to one correspondence between participants in the surveys. Specifically, we include information on the level and composition of household wealth. Net household wealth is measured as the net value of financial and real assets and debts. Note that collective pension savings are not included in the measure of household wealth because respondents do not have an individual claim on the collective pension investments of their pension fund. However, to take into account that many workers compulsory save in

collective company pension plans (as to supplement the pay as you go state pension benefits), we include a dummy for pension fund membership.

Table 1 provides information on the respondents' gender, age, education, gross monthly income, wealth, education level, whether they are living with a partner, their social status, and where they live. The average respondent turns out to be male, in his early 50s, and living with a partner. Compared to the Dutch population our sample of respondents is relatively highly educated. Correspondingly, respondents with high income and high wealth are somewhat overrepresented. For instance, 44 percent of the respondents have a gross personal income in the highest tertile of the population-wide distribution. Therefore, we use weights throughout the paper as to present findings that are representative of the Dutch population in terms of gender, age, education, and income.

Insert Table 1 here

Appendix 1 lists our main survey questions. The first questions ask what respondents would do if they were to receive a transfer (either €500 or €2000) from the ECB or the national government. The options given are: donate the money, spend it, save it, invest it, use it for down payments on debt (such as mortgages) or use it for another purpose. Respondents were asked to allocate the money received over these categories. They also could choose "I do not know".

The survey also contained several questions pertaining to respondents' knowledge. For instance, we asked whether respondents are aware of QE, heard about the concept of helicopter money, know the name of the ECB President, and can identify the main objective of the ECB. This allows us to test whether respondents' knowledge is related to their answers on how they intend to allocate the money received. In the questionnaire, we stressed that there was no need to search for the correct answers (see Appendix 1). We explicitly mentioned that participants should not worry about giving an incorrect answer. By including these comments, we wanted to minimise the likelihood that people used internet sources (such as the ECB website) to search for information while completing the survey. Of course, we cannot exclude that people searched for correct answers.

Still, searching for the answers to these questions would have taken quite some time. Also, we did not offer participants any monetary incentives for answering questions correctly and survey responses are anonymous, so that it is not possible for researchers to link the number of correct answers or other personal information to individuals. Therefore, it seems unlikely that a significant portion of the respondents engaged in searching behaviour.

## 4. Results

### 4.1 Will respondents spend the money received?

Table 2 shows the distribution of the answers to the questions about how the respondents would allocate a helicopter money transfer. We draw four conclusions from these results. First, the largest part of the money received will be saved (i.e. put on a saving account or used for debt redemption). For instance, out of a money transfer of €500 by the ECB, on average €220 will be saved and €50 will be used for debt redemption.

Second, the share of the transfers received that will be spent on average drops from about 34 to 28 percent if the size of the transfer increases from €500 to €2000. Thus, the marginal effectiveness of a money transfer in terms of money spent decreases with the size of the transfer.<sup>9</sup> In fact, respondents state that they intend to use a larger part of the money transfer for other purposes such as redeeming debt and—to a lesser extent—for donations or investments.

Third, as shown in Figure 1, these averages mask a large heterogeneity in individual responses. This figure shows the distribution of responses in a histogram with ten equally sized bins of €200. For instance, over 20 percent of respondents save (almost) nothing and over 10 percent of respondents save (almost) the full money transfer.

Finally, it does not make any difference whether respondents receive the transfer from the ECB or the national government. The latter finding therefore does not support Muellbauer's (2014) view that a helicopter money transfer via the central bank will be more effective than a helicopter money transfer via the

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<sup>9</sup> A lower marginal propensity to consume out of a higher money transfer may be due to a higher number of liquidity constrained consumers overcoming this constraint as shown by Christelis *et al.* (2016a).

government.

Insert Table 2 and Figure 1 here

#### *4.2 Does knowledge and income or wealth matter?*

The way consumers respond to a helicopter money transfer may depend on their knowledge of the current economic situation and the ECB or on their personal financial situation. In fact, economic and financial knowledge has proved to be an important determinant of many economic decisions (Lusardi and Mitchell, 2014). For example, studies have documented a relation between knowledge and the decision to enter stock markets (Van Rooij *et al.*, 2011), the accumulation of wealth (Van Rooij *et al.*, 2012), the choice of saving accounts (Deuflhard *et al.*, 2015), the choice of mortgage products (Van Ooijen and Van Rooij, 2016), and inflation expectations (Van der Cruijssen *et al.*, 2015).

To investigate the relation between helicopter transfers and knowledge, we have asked several questions about respondents' knowledge. See Appendix 1 for the precise wording of the questions. First, we explained the term helicopter money and asked whether respondents had heard about helicopter money before. It turns out this was only the case for 9 percent of the respondents. Perhaps more surprising is that the percentage of the respondents who are aware of QE is only slightly higher (12 percent).

In addition, we asked about the name of the president of the ECB and the responsibilities of the ECB. Only 34.5 percent knows that Mario Draghi is the President of the ECB (Jeroen Dijsselbloem, the Dutch Minister of Finance and president of the Eurogroup of finance ministers of countries in the Eurozone, came second with 19.3 percent). Furthermore, we asked about the tasks and objectives of the ECB. The results show that two thirds of the respondents are aware that the ECB is responsible for banking supervision. It turns out that 41 percent of the respondents know that price stability is among the monetary policy objectives of the ECB; but only 26.4 percent correctly indicated that this is the ECB's main objective. These results are broadly in line with the findings of Van der Cruijssen *et al.* (2015).

Table 3 shows the relationship between respondents' knowledge and how

they spend a €2000 transfer by the ECB.<sup>10</sup> Knowledge is measured using respondents' answers to the questions outlined above. We use respondents' estimates of the current rate of inflation to proxy their knowledge of the current economic situation. The median respondent estimates current inflation at 1.2 percent in the Netherlands which, at the time, was -0.2 percent, while 3 percent of the respondents estimate current inflation to be negative (both within the group of the 55 percent of the respondents who answer this question). We consider respondents whose estimate is reasonably close—i.e. within a range of plus or minus 1 percentage point from the actual inflation rate—to have knowledge about current inflation.

Our results do not provide strong evidence that knowledgeable respondents intend to spend a higher percentage of the transfer received. The only significant relationship is between knowledge of the current inflation rate and the allocation of the money transfer. Respondents who are aware of the current level of inflation are more inclined to save a larger part of the money transfer and spend less, i.e. 21 percent of the total transfer compared to 28 percent for the whole sample. This suggests that well-informed respondents may be more cautious in managing their finances.

Insert Table 3 here

The recent literature on consumption (discussed by Muellbauer, 2016) suggests that consumption does not only depend on income but also on the level and composition of households' wealth. To investigate the relationship between the respondents' intended allocation of a €2000 transfer by the ECB and their financial situation, we created tertiles for respondents based on their personal income, household net wealth, liquid assets as a percentage of total assets and dummies for pension fund membership, home ownership and having an 'under water' mortgage, i.e. a mortgage loan exceeding the value of the home. Table 4 shows that the results are broadly in line with our hypotheses. Respondents with

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<sup>10</sup> Given the small variation in allocation patterns in Table 2, we focus on the results of a €2000 money transfer by the ECB in the remainder of the paper. The results for government transfers or a €500 money transfer by the ECB are available on request.

low income or wealth levels intend to spend a larger percentage of the transfer while respondents with high income and wealth intend to use a larger percentage to repay debt or donate money. Similarly, homeowners intend to use a larger percentage of the transfer to redeem debt—and accordingly spend less—than respondents who rent a house.<sup>11</sup> Nevertheless, the differences between the various groups of respondents are small and the percentage of the transfer that will be spent varies within a narrow range of 23 to 32 percent.

Insert Table 4 here

#### *4.3 Will helicopter money affect expectations?*

Expectations play a key role in monetary policy making (Blinder *et al.*, 2008). Indeed, given the time it takes for monetary policy actions to reach their full impact, central banks monitor inflation expectations closely. As pointed out in section 2, inflation expectations may be influenced by helicopter money transfers. For instance, when individuals expect that the majority of households will spend the money transfers, these individuals may raise their inflation expectations accordingly, even when they do not intend to spend their helicopter money themselves.<sup>12</sup> As a result, even when only a small part of money transfers is actually spent, helicopter money could be effective in raising inflation expectations among the public. Similarly, it may effect inflation expectations via a signalling effect, i.e. the use of helicopter money emphasises the commitment of monetary authorities to their inflation target.

In the questionnaire, we ask respondents how they expect helicopter money will affect economic growth, inflation and wage increases, respectively. A

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<sup>11</sup> Falling home prices in the aftermath of the financial crisis in combination with the custom of first time buyers to take out high mortgages (see Van Ooijen and Van Rooij, 2016) resulted in many home owners facing loan to value ratios of over 100 percent with an interest in redeeming mortgage debt. Indeed, debt redemption is an important motive for saving in the Netherlands (Le Blanc *et al.*, 2016).

<sup>12</sup> There are some studies examining whether higher inflation expectations induce households to increase spending on consumer durables. The results are rather mixed. Whereas Bachmann *et al.* (2015) find no economically or statistically significant association between US households' inflation expectations and their readiness to spend on durables, Crump *et al.* (2015) find a large positive relationship. Also d'Acunto *et al.* (2016) report a positive association for German households.

similar question refers to the impact of QE. Note that these questions were asked after explaining the concepts of QE and helicopter money (see the questionnaire in appendix 1). Table 5 reports the results. Between 25 and 30 percent of the respondents expects (much) higher inflation. This group of respondents is twice as large as the group expecting (much) lower inflation. Thus, on balance helicopter money seems to slightly increase inflation expectations. However, according to the respondents, helicopter money will primarily affect economic growth expectations. Almost half of the respondents expect helicopter money to increase economic growth (but a small group foresees lower economic growth). Most respondents expect no impact on wages.

Insert Table 5 here

Comparing the perceived impact of QE and helicopter money, respectively, on inflation, economic growth and wages, we find some interesting similarities and differences. Similar to our findings for helicopter money, more respondents expect a positive impact of QE on economic growth than on inflation. However, compared to helicopter money expectations for all economic variables are less affected by QE; almost half of the respondents report not to know what to expect from QE. Most likely, the channels through which central bank purchases of securities affect the economy are less appealing to the public than the transmission channels of money transfers. Indeed, further analysis reveals that respondents who have heard about QE are more likely to expect an increase in inflation as a consequence of QE.<sup>13</sup>

#### *4.4 Trust in the ECB*

Compared to other European and national institutions, many people put high trust in the ECB (cf. Ehrmann *et al.*, 2012). However, trust in the ECB has declined after the onset of the financial crisis (Bursian and Fürth, 2015). This is worrisome, because trust in ECB supports the anchoring of inflation expectations around the ECB target of below but close to two percent (Christelis *et al.*, 2016b). A concern

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<sup>13</sup> Results are available on request.

about QE and helicopter money is that these measures may further undermine the public's confidence in the ECB. Table 6 shows the impact of several factors on respondents' trust in the ECB. The results suggest that the effect of helicopter money on public trust in the ECB is ambiguous. Helicopter money increases trust in ECB for almost 1 in 5 respondents, but decreases trust for 1 in 5 respondents as well. For the large majority, helicopter money does not change trust or respondents do not know yet whether their trust in the ECB will be affected.

The ECB policies to purchase government and corporate debt reduce trust in the ECB more than does helicopter money. For instance, 30 percent of respondents state that this lowers their trust in the ECB, compared to 13 percent reporting increased trust due to QE. An additional adverse effect on trust in the ECB will occur if QE leads to negative interest rates on consumer savings accounts. Also, negative mortgage rates would lower trust in the ECB. Conversely, the asset quality review of banks by the ECB had a positive impact on trust.

Insert Table 6 here

One might argue that these findings reflect that respondents may not understand what helicopter money does. However, when we analyse the support of helicopter money among those who are more knowledgeable (i.e. are familiar with the terms helicopter money or QE), we find that the effect of helicopter money on trust in the ECB is even more negative among the knowledgeable.

#### *4.5 Should the ECB do more?*

The ECB has taken unconventional measures to prevent deflation and raise inflation to its target of below but close to 2 percent. The ECB actions are not undisputed. While some state that the ECB should act more aggressively, others find the monetary policy too accommodative and urge governments to do their part and reform their economies to vitalise growth. Indeed, the ECB calls for more structural reforms by governments (Draghi, 2015).

The public seems to favour active policies both by the ECB and governments (Table 7). In fact, 40 percent of our respondents agrees that the ECB should take more action to increase inflation to 2 percent and 38 percent

disagrees that the ECB goes too far. Also, 37 percent agrees that governments and not the ECB should act to increase in inflation (compared to 25 percent of the respondents who disagree).

Insert Table 7 here

## **5. Concluding comments**

There are many proclaimed pros and cons of helicopter money. According to Turner (2015), “we should recognize that there is an undoubted technical case for using monetary finance in some circumstances, and now address the political issue of how to make ensure that it will only be used in appropriate circumstances and appropriately moderate quantities.” We argue that this conclusion may be premature, at least when it comes to monetary financing of a transfer to households. This particular form of helicopter money has been suggested, among others, by Muellbauer (2014).

We have asked participants in the CentERpanel how they will allocate a transfer received from either the ECB or the national government; to examine whether the size of the transfer matters, we asked the same question for two amounts of the transfer (€500 and €2000). Note that a money transfer of €2000 to every citizen aged 18 years or older in the 19 euro area countries would sum to a total amount of about €550 billion which is about equivalent to the total amount of securities purchased under EAPP within a seven month period.<sup>14</sup> Our findings suggest that only a small part of this money transfer will actually be spent. Also, helicopter money will have a limited impact on inflation expectations among the public.<sup>15</sup>

While the results indicate that the public expects both governments and the ECB to take action to increase inflation close to but below 2%, the impact of unconventional monetary policy on trust in the ECB seems mixed (in the case of helicopter money) or negative (for QE). It thus seems that the public does not consider helicopter money and QE as effective measures to increase inflation.

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<sup>14</sup> At the moment of writing, about €1600 billion has been purchased under the ECB's QE.

<sup>15</sup> Given the limited effects on spending, second round effects on inflation expectations will most likely be limited as well.

Indeed, most respondents indicate that they do not raise their inflation expectations in response to these measures.

Our finding that the impact of a helicopter transfer is very similar for transfers coming from the ECB or the government runs against the view of Muellbauer (2014). Consequently, if central banks were to consider helicopter money, there would be no need in terms of effectiveness for the ECB to distribute the money transfers rather than channel these transfers through the governments. In fact, given the resemblance of helicopter money and fiscal policy it may be preferable that fiscal authorities transfer the helicopter money. Our results indicate that in the current situation the public is expecting governments and not the ECB to take action.

An important issue is to what extent respondents will actually behave in the same way as they report in our survey. Note that while there is no obligation for respondents to act according to their survey answers, there is also no incentive for respondents to hide their true intentions.<sup>16</sup> Nevertheless, consumers may spend more than they plan upfront or respondents may change their mind if unanticipated shocks occur. Sahm *et al.* (2010) investigate the reliability of survey reports on intended spending before a US tax rebate by re-interviewing the respondents a couple of months after they had received the rebate. In both surveys, about a fifth of the respondents indicated to spend or have spent most of the rebate. Indeed, comparing individual responses, the majority of respondents had acted upon their intentions. Among respondents who switched to more or to less spending in the second survey, personal circumstances were the most reported cause for this switch.<sup>17</sup> Thus, in absence of economy-wide, unanticipated

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<sup>16</sup> Indeed, empirical studies have documented various examples of survey reports predicting real life behaviour. For instance, survey measures of risk tolerance have been shown to predict risky health behaviour such as smoking and drinking (Barsky *et al.*, 1997). Other examples include Hurd *et al.* (2011) who show that respondents with expectations of positive stock market returns are more likely to enter the stock market or Hurd *et al.* (2002) and Hurd and McGarry (2004) who show that self-reports on longevity are predictive for the decision when to claim retirement benefits in the US and for actual mortality. In a more recent example, Armantier *et al.* (2015) document evidence from incentivised experiments of individuals who act in line with their inflation expectations as reported in earlier surveys.

<sup>17</sup> Graziani *et al.* (2016) find no role for present-biasedness in explaining deviations of actual spending out of a payroll tax cut from consumers' spending intentions. Note that Graziani *et al.* (1996) do find higher actual spending than intended spending. They speculate that this puzzling finding may be related to mental accounting in relation to the tax rebate taking the form of higher monthly net income. Respondents, using different mental accounts for assets and income, may *ex-ante* perceive the tax relief as an addition to their financial assets and in *ex-post* surveys as an

shocks affecting many consumers in a similar way, actual spending quite accurately matched intended spending.

Finally, a crucial issue is to what extent the results of our survey among the Dutch population will be representative of the euro area as a whole. To shed more light on this issue, similar research for other countries in the euro area is needed.<sup>18</sup>

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increment to current income. The study by Sahm *et al.* (2010) on the 2008 tax rebates is not plagued by different mental accounts since these rebates take the form of a lump sum transfer.

<sup>18</sup> A recent study by ING (2016) comes to similar conclusions as the present study. Almost 12,000 people in 12 countries across Europe were asked how they would spend €2400 (which they would not have to repay); the study reports that only 26% of the respondents say they would spend most of the money.

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**Table 1. Sample statistics**

	Mean	Median	Min	Max	N
Male	0.53	1	0	1	2223
Age	54.3	56	18	93	2223
High education	0.39	0	0	1	2223
<i>Gross personal income</i>					
Low	0.27	0	0	1	2165
Intermediate	0.30	0	0	1	2165
High	0.44	0	0	1	2165
<i>Household net wealth</i>					
Low	0.25	0	0	1	1641
Intermediate	0.34	0	0	1	1641
High	0.42	0	0	1	1641
<i>Liquid assets</i>					
Low	0.33	0	0	1	1648
Intermediate	0.40	0	0	1	1648
High	0.27	0	0	1	1648
Pension fund member	0.71	1	0	1	1735
Homeowner	0.72	1	0	1	2223
Has under water mortgage	0.08	0	0	1	1695
Lives with partner	0.74	1	0	1	2223
Social status (1=very low, 5=very high)	3.61	4	1	5	2217
Urbanization (1=very low, 5=very high)	3.01	3	1	5	2198

Notes: Age is measured in years; other variables are 0-1 dummies, unless indicated otherwise. High education indicates that the respondent completed a higher vocational training or university. Gross personal income, household net worth and liquid assets are divided in three subgroups according to the tertiles in the population distribution. Household net wealth includes financial and real assets net of financial and mortgage debt. This definition does not include collective pension savings, but the pension fund member dummy indicates membership (active or passive) of pension funds (or insurance companies) taking care of collective pension savings plans organised at the company or sectoral level. Liquid assets are divided in three groups according to the percentage share of gross financial assets in total gross assets. Respondents have an 'under water' mortgage (negative equity) if their mortgage loan exceeds the value of their home. The social-economic status of the respondent is originally defined by Statistics Netherlands and takes a person's profession into account and whether he has a managing position and for how many employees. Urbanization measures whether a respondent lives in a rural area (less than 500 homes per squared kilometre; urbanization=1) or in a very strongly urbanised area (more than 2500 homes per squared kilometre; urbanization=5).

**Table 2. Allocation of helicopter transfer**

(Weighted average allocation in euros; percentages of total amount in parentheses)

	€500 received from ECB	€500 received from government	€2000 received from ECB	€2000 received from government
Save it	220 (44)	219 (44)	828 (41)	837 (42)
Spend it	172 (34)	173 (35)	556 (28)	542 (27)
Use it for debt redemption	50 (10)	48 (10)	320 (16)	323 (16)
Donate it	33 (7)	34 (7)	153 (8)	151 (8)
Invest it	9 (2)	10 (2)	62 (3)	66 (3)
Other	16 (3)	16 (3)	81 (4)	81 (4)
Do not know (%)	8	6	11	11

Notes: This table shows how money transfers (different amounts) from the ECB or the government will on average be spent (in euros except for the last row, which shows the percentage of respondents who respond 'do not know'). The numbers in parentheses show the percentages of the total amount received. N=1101 for €500 transfer and N=1122 for €2000 transfer.

**Table 3. The impact of knowledge on allocation of €2000 transfer from ECB**  
(Weighted average allocation in euros; percentages of total amount in parentheses)

Respondents who ...	Save	Spend	Redeem debt	Donate	Invest	Other	DK (%)
Heard about helicopter money	714 (36)	585 (29)	329 (16)	180 (9)	155 (8)	38 (2)	6
Heard about QE	757 (38)	485 (24)	321 (16)	174 (9)	219 (11)	44 (2)	4
Knows name of ECB President	772 (39)	536 (27)	346 (17)	168 (8)	106 (5)	70 (4)	8
Knows price stability main objective ECB	812 (41)	569 (28)	310 (15)	137 (7)	106 (5)	68 (3)	5
Knows ECB responsible for bank supervision	810 (40)	560 (28)	333 (17)	164 (8)	54 (3)	80 (4)	5
Knows current inflation rate	935 (47)	427 (21)	270 (14)	176 (9)	145 (7)	47 (2)	4

Notes: This table shows how a €2000 helicopter transfer from the ECB will on average be spent by different subgroups of respondents (in euros except for the last column, which shows the percentage of respondents who respond DK = 'do not know'). The numbers in parentheses show the percentages of the total amount received. N=1122.

**Table 4. The impact of income and wealth on allocation of €2000 transfer from ECB**  
(Weighted average allocation in euros; percentages of total amount in parentheses)

	Save	Spend	Redeem debt	Donate	Invest	Other	DK (%)
<i>Income</i>							
- low	867 (43)	601 (30)	221 (11)	172 (9)	40 (2)	99 (5)	16
- intermediate	806 (40)	535 (27)	354 (18)	158 (8)	41 (2)	106(5)	10
- high	807 (40)	526 (26)	392 (20)	130 (7)	105(5)	40 (2)	5
<i>Net wealth</i>							
- low	842 (42)	575 (29)	269 (13)	128 (6)	76 (4)	110(6)	17
- intermediate	844 (42)	549 (27)	289 (14)	187 (9)	63 (3)	68 (3)	10
- high	737 (37)	456 (23)	383 (19)	259 (13)	107(5)	58 (3)	8
<i>Liquid assets</i>							
- low	776 (39)	502 (25)	420 (21)	192 (10)	62 (3)	49 (2)	15
- intermediate	765 (38)	494 (25)	383 (19)	170 (9)	90 (5)	97 (5)	8
- high	880 (44)	586 (29)	139 (7)	212 (11)	92 (5)	90 (5)	13
<i>Pension fund member</i>							
- no	819 (41)	546 (27)	264 (13)	212 (11)	60 (3)	99 (5)	12
- yes	803 (40)	535 (27)	345 (17)	163 (8)	83 (4)	70 (4)	12
<i>Home owner</i>							
- no	837 (42)	633 (32)	245 (12)	131 (7)	61 (3)	92 (5)	11
- yes	823 (41)	511 (26)	362 (18)	166 (8)	63 (3)	75 (4)	11
<i>Under water mortgage</i>							
- no	811 (41)	535 (27)	294 (15)	198 (10)	82 (4)	81 (4)	11
- yes	817 (41)	548 (27)	434 (20)	67 (3)	43 (2)	92 (5)	22

Notes: This table shows how a €2000 helicopter transfer from the ECB will on average be spent by different subgroups of respondents (in euros except for the last column, which shows the percentage of respondents who respond DK = 'do not know'). The numbers in parentheses show the percentages of the total amount received.

**Table 5. Perceived impact of helicopter money and QE**  
(Weighted percentages of respondents)

	€500 received from ECB (1)	€500 received from government (2)	€2000 received from ECB (3)	€2000 received from government (4)	QE (5)
<i>Panel A. Perceived consequences for inflation</i>					
Much lower	1.3	1.0	0.6	0.5	0.7
Lower	13.0	14.3	12.5	12.1	10.9
Stays equal	37.4	38.2	34.2	34.2	23.8
Higher	26.3	25.6	26.0	28.4	18.1
Much higher	1.1	0.8	1.7	1.6	1.0
Do not know	21.0	20.3	25.0	23.2	45.4
<i>Panel B. Perceived consequences for economic growth</i>					
Much lower	1.2	1.5	0.8	0.9	0.4
Lower	7.6	7.3	5.1	7.8	6.2
Stays equal	29.6	28.9	25.2	24.9	22.5
Higher	43.5	44.2	47.9	46.5	26.5
Much higher	1.4	2.0	1.5	2.0	0.4
Do not know	16.7	16.2	19.4	17.9	44.0
<i>Panel C. Perceived consequences for wages</i>					
Much lower	1.0	1.2	1.6	1.9	0.8
Lower	13.0	12.0	10.0	8.4	7.9
Stays equal	62.0	62.4	58.8	61.2	40.5
Higher	8.1	8.4	9.2	9.3	6.9
Much higher	0.1	0.1	0.2	0.2	0.1
Do not know	16.1	15.9	20.2	19.0	43.8
# observations	1101	1101	1122	1122	2223

Notes: This table shows the respondents' perception of the impact of transfers on inflation, economic growth and wages for different transfers (€500 and €2000) provided by the ECB and the government and the impact of QE by the ECB. Due to rounding the percentages may not sum to 100.

**Table 6. What is the effect on trust in the ECB of .... ?**

(Weighted percentages of respondents)

	Less	Equal	More	Do not know
Helicopter money	17.7	37.4	18.7	26.2
Buying government debt	23.2	30.6	15.7	30.5
Buying corporate debt	30.2	26.1	12.8	30.9
Review asset quality banks	7.3	28.2	33.1	31.5
Negative interest savings accounts	50.0	14.0	4.1	31.9
Negative mortgage interest rates	35.3	19.5	7.6	37.6

Notes: percentages may not sum to 100 due to rounding. N=2223.

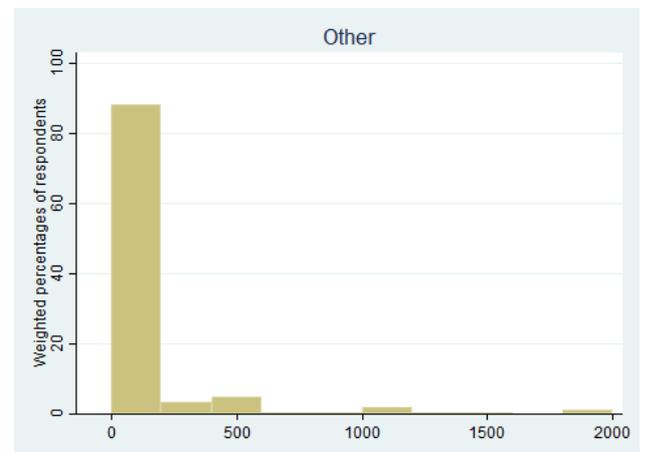
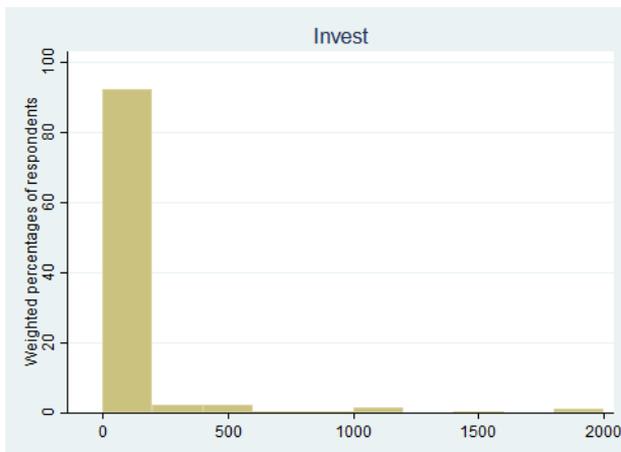
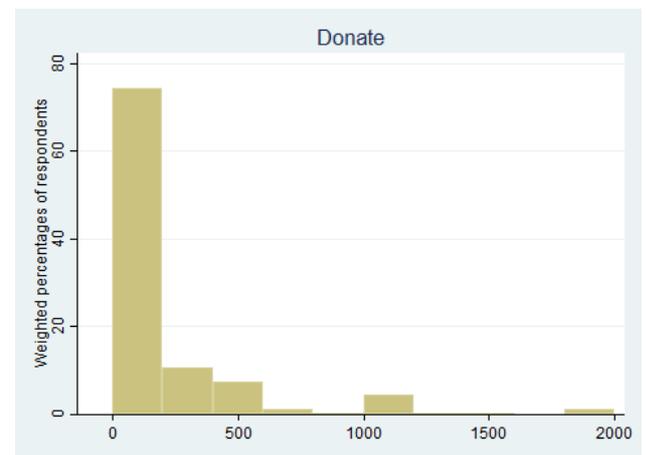
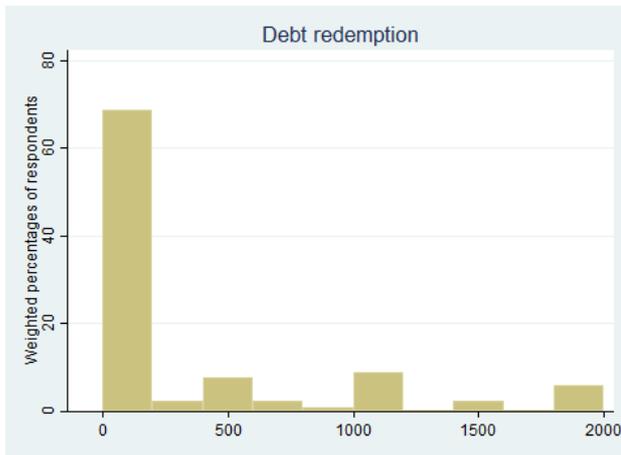
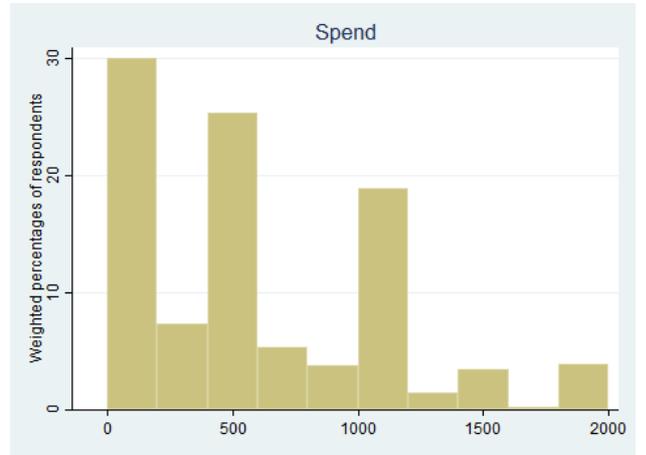
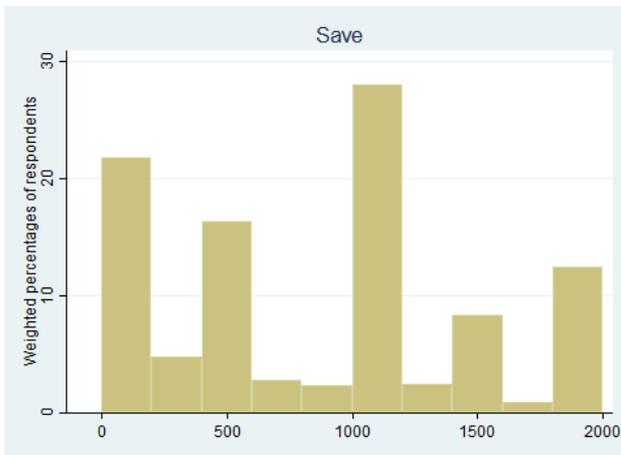
**Table 7. Statements on actions to increase inflation to close to 2%**

(Weighted percentages of respondents)

	Agree	Disagree	Do not know
ECB should take more action	39.9	25.4	34.7
ECB goes too far	23.0	38.3	38.7
Governments, not ECB, should act	37.1	25.6	37.3

Notes: percentages may not sum to 100 due to rounding. N=2223.

**Figure 1. Distribution of allocation of €2000 transfer from ECB**



## Appendix 1. The Survey

Below, we explain the structure and precise wording of the most important questions in our survey.

### Structure of the questionnaire

Our sample of respondents was randomly split into four groups. Group 1 was offered question Q1a, group 2 was offered question Q1b, and so forth. Note that respondents could cross an 'I do not know' option when answering this question. Next, all respondents answer question Q2. Thereafter, each group was offered a similar question as in Q1a-d, but now with 'European Central Bank' replaced by 'government' and vice versa. Next, all respondents answer a question similar to question Q2 and all questions thereafter are offered to all respondents as well.

### Wording of questions

The question numbers refer to the actual order in the survey.

Q1a) Imagine that the **European Central Bank** (ECB) deposits **€500** on the bank account of each citizen aged 18 years and older in the euro area. What would you do with this money?

Please divide €500 between the following categories:

- Donate (e.g. to a good cause or relative)
- Spend on groceries, furniture, vehicles, trips, vacation or other expenses
- Put aside (e.g. on a savings account)
- Invest (e.g. in stocks)
- Redeem mortgage or other debt
- Other

Q1b) Imagine that the **European Central Bank** (ECB) deposits **€2000** on the bank account of each citizen aged 18 years and older in the euro area. What would you do with this money?

Please divide €2000 between the following categories:

- Donate (e.g. to a good cause or relative)
- Spend on groceries, furniture, vehicles, trips, vacation or other expenses
- Put aside (e.g. on a savings account)
- Invest (e.g. in stocks)
- Redeem mortgage or other debt
- Other

Q1c) Imagine that the **government** deposits **€500** on the bank account of each citizen aged 18 years and older in the euro area. What would you do with this money?

Please divide €500 between the following categories:

- Donate (e.g. to a good cause or relative)

- Spend on groceries, furniture, vehicles, trips, vacation or other expenses
- Put aside (e.g. on a savings account)
- Invest (e.g. in stocks)
- Redeem mortgage or other debt
- Other

Q1d) Imagine that the **government** deposits **€2000** on the bank account of each citizen aged 18 years and older in the euro area. What would you do with this money?

Please divide €2000 between the following categories:

- Donate (e.g. to a good cause or relative)
- Spend on groceries, furniture, vehicles, trips, vacation or other expenses
- Put aside (e.g. on a savings account)
- Invest (e.g. in stocks)
- Redeem mortgage or other debt
- Other

Q2) What do you think are the consequences of this measure for economic growth, inflation and wages of employees? DK=I do not know

	Much lower	Lower	Equal	Higher	Much higher	DK
Economic growth is ..	<input type="checkbox"/>					
Inflation is ..	<input type="checkbox"/>					
Wages are ..	<input type="checkbox"/>					

Q3a-Q3d) similar to Q1a-Q1d, but now with 'European Central Bank' replaced by 'government' and vice versa (see above for description of the structure of the survey)

Q4) is identical to Q2

Q5) Money deposited by the European Central Bank (ECB) on citizens' bank accounts (directly or via the government) is called helicopter money. Have you ever heard about 'helicopter money' before?

- Yes
- No

Q6) The European Central Bank (ECB) purchases government bonds (government debt) as of March 2015 and will start purchasing corporate bonds (corporate debt) on the financial markets soon. This is called quantitative easing. Have you

ever heard about quantitative easing (or QE) before?

- Yes
- No

Q7) is identical to Q2

Q8) For you personally, do the measures or developments below lead to less, equal or more trust in the European Central Bank (ECB)?

	Less	Equal	More	Don't know
Depositing money on citizens' bank accounts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Purchasing government debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Purchasing corporate debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Review asset quality banks (as part of the European supervision of banks)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negative interest savings accounts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negative mortgage interest rates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q9) Who is the president of the European Central Bank (ECB)? We are interested in your first thought. You do not need to be sure about your answer and you are not supposed to look up the answer.

- Jeroen Dijsselbloem
- Mario Draghi
- François Hollande
- Jean-Claude Juncker
- Klaas Knot
- Christine Lagarde
- Angela Merkel
- Mark Rutte
- Jean-Claude Trichet
- Nout Wellink
- I do not know

Q10) What are the main goals and tasks of the European Central Bank (ECB)? We are interested in your first thought. You do not need to be sure about your answer and you are not supposed to look up the answer. You may cross multiple answers.

- High economic growth
- High wages
- Low unemployment
- Price stability
- Supervision of banks

I do not know

Q15) What do you think is the current rate of inflation in the Netherlands? If you think the inflation rate is negative, you can provide a negative percentage using the minus sign (-). You may provide a percentage answer up to 1 digit after the comma. Please provide an estimate if you are not sure about your answer. You are not supposed to look up the answer.

.. percent

I do not know

Q22) To what extent do you agree or disagree with the statements below? You may answer on a scale from 1-10, where 1 means 'completely disagree' and 10 means 'completely agree'. ? = I do not know

	1	2	3	4	5	6	7	8	9	10	?
The European Central Bank (ECB) should do more to move inflation close to two percent.	<input type="checkbox"/>										

The European Central Bank (ECB) goes too far to move the inflation close to two percent	<input type="checkbox"/>										
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It is now up to the governments and not the European Central Bank (ECB) to move the inflation closed to two percent	<input type="checkbox"/>										
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