

Introduction to Macroeconomics

Answers to First Homework Exercise

Robert M. Kunst

March 2010

1. First, we determine the demand *components* of GDP, as required. $C = 252\text{€}$, while $I = G = X = IM = 0$, thus $GDP = C + I + G + X - IM$ holds rather trivially. Household saving amounts to 200€ of income minus 252€ of consumption, i.e. to -52€ . The saving of firms is their retained profits of 40€ . The government receives 42€ of VAT. Saving of the rest-of-the-world is -30€ , the profits of firm A minus the border-crossing wage payments to households. Thus, the *saving identity* $I = 0 = -52 + 40 + 42 - 30$ holds exactly. Finally, *personal disposable income* is the disposable income of the household sector, and we know already that it is 200€ .
2. First, we notice that some *demand components* change. Still, $I = 0$ and $X = 0$ but $IM = 42\text{€}$ now, as the government spends its tax revenues abroad. The value of the produced government output must be assessed at market prices, inclusive of VAT, i.e. at $G = 50\text{€}$, and thus GDP increases to $260\text{€} = C + I + G + X - IM = 252\text{€} + 0 + 50\text{€} + 0 - 42\text{€}$. In the *saving identity*, household saving and firm saving have not changed. RoW saving has increased to $42 - 30\text{€}$, while government saving has decreased to zero, all the revenues are spent. Thus, $I = 0 = -52 + 40 + 0 + 12$ still holds, as should be. Personal disposable income is unaffected at 200€ .
3. Here, another demand component changes, there is now an investment of $I = 84\text{€}$. We have been told that GDP is unchanged at 260€ , which corresponds nicely to $260 = 168 + 84 + 50 + 0 - 42$, different distribution, same result. Household saving increases to 32€ , as described. Neither

firms nor government nor RoW saving change, thus $I = 84 = 32 + 40 + 0 + 12$ works nicely for a saving identity. Personal disposable income is unchanged.

4. Taxing wages at 10% means that less income reaches the households and becomes disposable and more flows to government. I assume that wages from abroad are untaxed (may even remain unknown to the fiscal authorities), so just 15€ flow to government. Households still consume two cars for 168€, though their disposable income has fallen to 185€. However, all these events are transfer events, related to the secondary redistribution, so the account-0 identity remains unchanged. By contrast, household saving has been reduced to 17€ and government saving has increased to 15€, such that the saving identity becomes $I = 84 = 17 + 40 + 15 + 12$.
5. As compared to anything above, this last point is pretty trivial. NDP is just GDP minus 10€ or 250€. Similarly, NNI is at 280€. Let us finally check the saving identity for net contributions: $I_{\text{net}} = 74 = 17 + 30 + 15 + 12$, i.e. the firms' net disposable income is a bit lower, as they have to bear the costs of depreciation.