

Accounting for Wealth in the Czech Republic¹

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Abstract

We often meet with the analysis of household final consumption expenditure, less frequently with analyzes of household wealth. Both categories are important for the characterization of the standard of living, both are provided by the system of national accounts, but each of them is quite a different phenomenon. Household wealth comes, besides capital transfers and other changes, mainly from accumulated part of disposable income not used for current expenditure on final consumption.

Keywords

Gross domestic product, savings, national wealth, assets, liabilities, households

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INTRODUCTION

We often meet with the analysis of household final consumption expenditure³, less frequently with analyses of household wealth. Both categories are important for the characterization of the standard of living, both are provided by the system of national accounts, but each of them is quite a different phenomenon. Household wealth comes, besides capital transfers and other changes, mainly from accumulated part of disposable income not used for current expenditure on final consumption.

Dependence of both categories, however, is mutual – the wealth of households comes not only from what was not consumed in the current year (about 11 % of disposable income), but also on the contrary, existing wealth directly affects the final consumption expenditure (essential part of imputed rent) or generates a large part of disposable income by some form of property income, e.g., rents, dividends, interest (about 20% of disposable income).

National accounts presents the economy in a form of a consistent model where flows are followed by the stocks, see Hronova et al. (2009).

1 NATIONAL WEALTH OF THE CZECH REPUBLIC

National wealth or net worth of the total economy and individual institutional sectors have been recorded in the Czech national accounts from the beginning of their compilation, since 1993. The original data simply reflected figures from business accounts, i.e., they matched the methodological principles of

¹ The article is based on the paper presented on the OECD Working Party on Financial Statistics, October 3rd, 2013, Paris. However, all figures used in the article correspond now to new methodologies SNA2008/ESA2010. They are based on new time series published by the CZSO in October 2014: <<http://apl.czso.cz/pll/rocenka/rocenka.indexnu>>.

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³ The issue of households consumption from long perspective was profoundly elaborated in Sixta et al. (2014).

business accounting and did not cover all of economic units, or in other words, they were not complete and methodologically correct (see National accounts for the Czech Republic, Paris 1998, OECD). Since this introduction of the system, the CZSO seeks for compilation with all methodological principles of the national accounts.

Gradually we are improving the quality and completeness of the quantification of the national wealth, or particular types of assets, and within each main/occasional revision of the national accounts data to perform retrospective estimates to ensure comparable time series. Yet, even after 20 years, after last main revision made in occasion with transition to new methodology SNA 2008/ESA 2010, this process is not completely finished. Some of the most significant weaknesses are further indentified.

The national wealth of the Czech Republic for the year 2012 recorded in the national accounts amounts to 27.9 trillions CZK, of which non-financial assets represent CZK 29.3 trillion and net financial worth shows negative value of CZK -1.4 trillion.

The system of national accounts provides a combined view on the national wealth. Besides the subject structure of the national wealth, the ownership and purpose have the same importance. In the Czech national accounts, there are created in addition to the standard system of sector accounts and input-output tables so called balances of non-financial assets that give three-dimensional views on each group of non-financial assets: asset x sector x industry.

However, an industrial structure of non-financial assets is analytically important for the non-financial corporations sector, while in the household sector it is relevant for sub-sector of entrepreneurs only. But, the article is focused further on the household sector that is why the industrial structure of non-financial assets will be omitted. The overview of subject structure of the net worth of all five institutional sectors for 2012 is provided in the Table 1.

Due to the different role of each sector in the national economy it is quite logical that the structure of the net worth of each sector differs greatly from the structure in the other sectors.

1.1 Non-financial assets

Non-financial assets (see Table 2) are represented mainly by fixed assets. Quantification of all types of fixed capital (except of cultivated assets) is performed using PIM.⁴ Here we have the most elaborated procedures, but we are working on other specific improvements, especially in capturing other changes in volume of assets and acquisitions less disposals of used fixed assets.

Inventories represent 7% of non-financial assets, in particular, due to a big value of forests recorded under the heading "Work in progress on cultivated biological assets". Valuation of forests is carried out, however, using the market price of wood for the current year instead of the discounted future income from the sale of wood. More about this issue will be in the second part of the paper.

The value of the valuables recorded in the Czech national accounts is very low, because it involves basically only valuables captured in the business accounts of the corporations and valuables made or traded during the past 20 years. Therefore the Czech national accounts do not include collections in museums, or valuables held by households on a long-term basis.

Non-produced assets recorded in the Czech national accounts represent 33% of the value of non-financial assets. They include, in principle, only land, subsoil assets and the part of patents that corporations record in their business accounts. The value of subsoil assets was newly quantified using quantity x price method for individual type of mineral reserves. This new estimate represents the biggest change in the Czech national accounts made under the last main revision in 2014.

⁴ Brief description of PIM (perpetual inventory method) can be found in Sixta (2007). Alternative estimates of stocks and depreciation is presented in Krejci and Sixta (2012).

Table 1 Net Worth by sector and type of assets, Czech Republic, 2012, CZK bill.

Code	Assets	Total economy	Non-financial corporations	Financial corporations	General government	Households	NPISH
		S.1	S.11	S.12	S.13	S.14	S.15
AN	Non-financial assets	29 340	9 798	256	13 231	5 945	110
AN.1	Produced assets	19 693	9 138	221	5 428	4 811	95
AN.11	Fixed assets	17 467	7 632	206	5 154	4 382	93
	<i>Dwellings</i>	4 735	497	1	260	3 974	3
	<i>Other buildings and structures</i>	9 432	4 440	155	4 580	176	81
	<i>Machinery and equipment</i>	2 807	2 386	21	166	227	7
AN.12	Inventories	2 066	1 503	14	271	276	2
	<i>Work in progress on culti assets</i>	1 017	608	0	200	208	2
AN.13	Valuables	160	3	1	3	153	0
AN.2	Non-produced assets	9 647	660	35	7803	1134	15
	<i>Land</i>	2 064	529	19	367	1134	15
	<i>Mineral and energy reserves</i>	7 434	5	0	7429	0	0
AF	Financial assets	18 150	4 936	7 208	1 822	4 082	102
AF.1	<i>Monetary gold and SDRs</i>	34	0	34	0	0	0
AF.2	<i>Currency and deposits</i>	4 864	887	1 240	501	2 211	25
AF.3	<i>Debt securities</i>	2 492	57	2 274	36	121	4
AF.4	<i>Loans</i>	3 293	386	2 770	120	16	1
AF.5	<i>Equity and shares</i>	3 585	1 266	471	818	1027	3
AF.6	<i>Insurance, pension schemes</i>	659	34	55	1	568	1
AF.7	<i>Financial derivates</i>	193	35	153	3	2	0
AF.8	<i>Other accounts receivable</i>	3 030	2 271	211	343	137	68
AF	Liabilities	19 594	8 516	7 262	2 426	1 385	5
AF.1	<i>Monetary gold and SDRs</i>	23	0	23	0	0	0
AF.2	<i>Currency and deposits</i>	4 489	0	4 485	4	0	0
AF.3	<i>Debt securities</i>	2 410	260	267	1 883	0	0
AF.4	<i>Loans</i>	3 555	1 608	494	197	1 253	3
AF.5	<i>Equity and shares</i>	5 088	4 095	992	1	0	0
AF.6	<i>Insurance, pension schemes</i>	641	0	641	0	0	0
AF.7	<i>Financial derivates</i>	212	67	126	19	0	0
AF.8	<i>Other accounts payable</i>	3 176	2 486	234	322	132	2
BF.90	Net Financial Worth	-1 444	-3 580	-54	-604	2 697	97
B.90	Net Worth	27 896	6 218	202	12 627	8 642	207

Source: Own research, CZSO

Table 2 Non-financial assets, Czech Republic, 2012

		CZK billions	%
AN.	Non-financial assets	29 340	100%
AN.1	Produced assets	19 693	67%
AN.11	Fixed assets	17 467	60%
	<i>Dwellings</i>	4 735	16%
	<i>Other buildings and structures</i>	9 432	32%
	<i>Machinery and equipment</i>	2 807	10%
AN.12	Inventories	2 066	7%
	<i>Work in progress on cultivated biological assets</i>	1 208	3%
AN.13	Valuables	160	1%
AN.2	Non-produced assets	9 647	33%
	<i>Land</i>	2 064	7%
	<i>Mineral and energy reserves</i>	7 434	25%

Source: Own research, CZSO

1.2 Financial assets

Financial assets or balance of financial assets less liabilities in total (see Table 3) have for the Czech economy a negative value of CZK –1.4 trillion. This balance as “Net financial worth” of the Czech economy represents the final relation to non-residents.

Table 3 Net financial worth and relation to RoW, Czech Republic, 2012, CZK bill.

		Czech Republic			Non residents		
		Assets	Liabilities	Diff	Assets	Liabilities	Diff
BF.90	Financial net worth	18 150	19 594	-1 444	4 317	2 861	1 456
AF.1	Monetary gold and SDRs	34	23	11	23	22	1
AF.2	Currency and deposits	4 864	4 489	375	324	699	-375
AF.3	Debt securities	2 492	2 410	82	720	802	-82
AF.4	Loans	3 293	3 555	-262	535	273	262
AF.5	Equity and shares	3 585	5 088	-1 503	2 113	610	1 503
AF.6	Insurance, pension schemes	659	641	18	13	31	-18
AF.7	Financial derivatives	193	212	-19	113	94	19
AF.8	Other acc receivable/payable	3 030	3 176	-146	476	330	146

Source: Own research, CZSO

The most important liability in relation to rest of the world (RoW) are shares of non-residents in corporations representing almost half the assets of non-residents in the Czech Republic. Moreover, according to the experimental valuation at a real market value level the equity owned by non-residents would be doubled. The second most important financial instrument in relation to RoW is “Debt securities” that serves mostly for financing of the debt of governmental institutions. Mainly due to these two types of financial assets the net financial worth of the Czech Republic significantly declined over the past 20 years (see Table 4).

Table 4 Net worth, Czech Republic, CZK bill.

Items	1993 (OS)	1995	2000	2005	2010	2011	2012	2013
Non-financial assets	10 756	14 686	20 879	23 691	28 393	29 148	29 340	29 336
<i>of which fixed assets</i>	5 005	7 499	11 679	14 145	17 283	17 477	17 467	17 516
<i>% of fixed assets in NW</i>	46%	51%	56%	62%	64%	63%	63%	62%
Financial assets	5 047	6 779	9 579	12 831	16 600	17 427	18 150	19 573
Liabilities	4 917	6 673	9 759	13 708	18 112	18 931	19 594	20 682
<i>Net financial worth</i>	130	106	-180	-877	-1 512	-1 504	-1 444	-1 109
Net worth	10 886	14 792	20 699	22 814	26 881	27 644	27 896	28 227

Source: Own research, CZSO

For each of the financial asset a “whom to whom” matrix is compiled. This technique is used for balancing of assets and liabilities among institutional sectors, subsectors and RoW. However, the CZSO has not yet published these matrices that give complete information about ownership. An example of such matrix for the item “securities other than shares” (AF.3) is shown in the aggregate form in Table 5.

Table 5 “Whom to whom” matrix for closing stocks of debt securities (AF.3), 2012, CZK bill.

		ASSETS						Liabilities total
		S.11	S.12	S.13	S.14	S.15	S.2	
LIABILITIES	S.11	5	38	6	0	1	210	260
	S.12	19	193	0	19	0	36	267
	S.13	21	1 294	29	62	3	474	1 883
	S.14	0	0	0	0	0	0	0
	S.15	0	0	0	0	0	0	0
	S.2	12	749	1	40	0	0	802
Assets, total		57	2 274	36	121	4	720	3 212

Source: Own research, CZSO

These “whom to whom” matrices are a key instrument for the estimates of missing, weak or incomplete data for some sectors and subsectors. For each financial asset five matrices are always compiled and balanced, for: (1) opening stock (os), (2) transactions, (3) other changes in volume, (4) revaluation and (5) closing stock. They serve also as key instrument because they allow balancing the whole system of accounts for the total economy and for all sectors.

1.3 Experimental valuation of equity

Compliance with the methodological principles of the national accounts for the valuation of assets (e.g., fixed capital formation, stocks, land) raises the similar needs to approach the valuation of the equity on the liabilities side. If the equities of corporations on liability side are valued according to data taken from business accounts (e.g. for limited liability companies in the amount of paid-up capital) without any adjustments due to changes in valuation of assets the net worth of corporations will be influenced, instead of the net worth of owners. The net worth then ceases to reflect actual ownership structure.

The shares are evaluated in the Czech national accounts by several ways, according to the types of units: joint-stock companies quoted on the stock exchange, the other joint-stock companies, banks, insurance companies and pension funds, investment funds, limited liability companies, housing associations, and others.

For the estimation of *listed shares* a special database MAGNUS is used, which allows to find prices of listed shares at a given moment, as well as their owners. The calculation procedure is therefore based on a comprehensive assessment of the amount of liabilities side of the sector and its subsequent distribution to the holders of this amount on the assets side.

Unquoted shares of non-financial corporations and ancillary and other financial institutions (S.11, S.123 and S.124) are valued in the amount of the book value of equity capital. If the data for equity capital is missing, the value of stockholders' equity is used. Next, estimated equity is allocated to counter-parties on the basis of information from the MAGNUS, SCP and commercial register.

For *financial intermediaries and insurance companies and pension funds* (S.122 and S.125), it is based on the value of equity according to the banking statistics or met system for insurance companies and pension funds. The assessed value is divided to counter parties according to information from the MAGNUS, SCP (a governmental institution Centre of securities) and commercial register. *Mutual funds* shares are estimated according to the database of the Association for the capital market.

Other equity in *limited liability companies* and incorporated partnerships are valued in the amount of the paid-up capital. This approach is not sustainable for future because by new business law the paid-up capital is CZK 1.

Other equities of *housing cooperatives* are valued by value of apartments in which the members of cooperatives live. The debate whether this procedure is correct initiated more general discussion about

the valuation of equity and definition of the net worth.⁵ If not, then the net equity of housing cooperatives is very high, but real owners of net worth are the members of the cooperative. If yes, then we should analogously evaluate the shares in other corporations.

The above listed approaches show very heterogeneous valuation of equity in the current practice. Both the volume and sectoral structure of equity are therefore distorted, and the same is true for the net worth. For this reason, the CZSO has approached to the experimental valuation of equity and their allocation of institutional sectors of the owners. The starting point is the definition of equity in ESA 2010, mainly in paragraphs §5.141 and § 7.71.

Definition of Equity (E.51) by ESA 2010 §5.141: equity is a financial asset that is a claim on the residual value of a corporation, after all other claims have been met. So, the definition says that equity of a corporation is the residual value, and then what is the net worth?

ESA 2010 § 7.71: Listed shares (AF.511) are valued at their market values. The same value is adopted for both the asset side and the liability side, although shares and other equity are not, legally, a liability of the issuer, but an ownership right to a share in the liquidation value of a corporation, where the liquidation value is not known in advance. So, the definition says that equity should be evaluated as a share in the liquidation value of a corporation.

Both definitions lead us to conclusions that in the first place it is necessary to define net worth of corporations and then equity to value as a difference between assets and liabilities. If market value of fixed assets (buildings) increases, the value of equity in a corporation should increase by the same value (revaluation).

From both definitions we also made a conclusion that the net worth of a corporation consists only from a net disposable income in the current year because the net disposable income for all previous financial years have been yet distributed to the owners as dividends or reinvested. Reinvested net disposable income of corporations under domestic control increasing the equity value should be recorded as revaluation.

Quantifying the actual value of equity, however, is only the first stage; more difficult task is an allocation of this adjustment to the sector of owners. Allocation process has not yet been sufficiently developed. Therefore, an experimental estimate was made only for non-financial corporations with provisional assumption:

- the change of the value of equity for the public non-financial corporations has been fully allocated to the general government sector;
- the change of the value of equity for the national private non-financial corporations has been fully allocated to the households sector;
- the change of the value of equity for the foreign controlled non-financial corporations has been fully allocated to the rest of the world sector.

Table 6 shows an impact of this experimental reallocation on the net worth. Total national worth fell by 9% because of decreased net worth of the companies under foreign control. The picture has changed also inside the national economy. Under the principle “wealth do not belongs to company but to its

⁵ The owners of the housing cooperatives are members of cooperatives that usually live in the cooperative flats. Members-tenants, therefore, do not own the flats in which they live directly, but they owned shares of the cooperative. Rentals paid by members-tenants to cooperatives cover their operating costs and amortization/reproduction of their housing fund; however, cooperatives do not make any profit from their core business. So, housing cooperatives can create profit, according to the law, only from some secondary activities or from renting apartments to non-members of the cooperative. The question is how to evaluate the shares of the members in the cooperative. By business accounting they are evaluated in the amount of initial deposits to the cooperative. The actual market value of the flats, however, is much higher due to the general trend of prices of real estate, and, in particular, therefore, that cooperative financed flats from deposits by members, but also by subsidies and loans, or due to privatisation of municipal flats for significantly lower price than their market value. For these reasons, we correct the data taken from accounts of housing cooperatives, and the participation of the members in cooperatives we evaluate by the market value of flats reduced by taken loans.

owners” the households are richer mainly due to ownership of limited liability companies, and, similarly, governmental institutions are richer mainly due to ownership of public/state companies.

Table 6 Experimental reallocation of Net Worth, Czech Republic, 31.12.2012, CZK bill.

Code	Assets	Total economy	Non-financial corporations	Financial corporations	General government	Households	NPISH	Non-residents
		S.1	S.11	S.12	S.13	S.14	S.15	S.2
Officially published figures (Net Worth is attributed to corporations)								
AF.5A	Equity and shares (assets)	3 585	1 266	471	818	1 027	3	2 113
AF.5L	Equity and shares (liabilities)	5 088	4 095	992	1	0	0	610
BF.90	Net Financial Worth	-1 444	-3 580	-54	-604	2 697	97	1 453
B.90	Net Worth	27 896	6 218	202	12 627	8 642	207	1 453
Experimental figures (Net Worth is attributed to owners)								
AF.5A	Equity and shares (assets)	7 145	1 266	471	2 320	3 085	3	3 615
AF.5L	Equity and shares (liabilities)	11 248	10 255	992	1	0	0	610
BF.90	Net Financial Worth	-4 044	-9 740	-54	898	4 755	97	2 955
B.90	Net Worth	25 296	58	202	14 129	10 700	207	2 955

Source: Own research, CZSO

2 NET WORTH OF THE HOUSEHOLD SECTOR

Net worth of Czech households recorded in national accounts consists in principle of three types of non-financial assets (dwellings, forests and land) and three types of financial assets (deposits minus loans, equity and insurance and pension schemes), see Table 7. Other assets together represent less than 10% of the net worth of households. Therefore, we focus on these six types of asset, both on methods of estimation and values in the time series since 1993.

Table 7 Households sector – Structure of net worth, Czech Republic, 2012, CZK bill.

Code	Assets	by published NAcz			with revaluated other equity		
		CZK billions	% of total economy	% of NW S.14	CZK billions	% of total economy	% of NW S.14
AN	Non-financial assets	5 945	20.3	68.8	5 945	20.3	55.6
	<i>Dwellings</i>	3 974	83.9	46.0	3 974	83.9	37.1
	<i>Forests</i>	208	20.5	2.4	208	20.5	1.9
	<i>Land</i>	1 134	54.9	13.1	1 134	54.9	10.6
BF.90	Net Financial Worth	2 697	x	31.2	4 755	x	44.4
	<i>Currency and deposits less loans</i>	974	74.4	11.3	974	74.4	9.1
	<i>Equity and shares</i>	1 027	28.6	11.9	3 085	43.2	28.8
	<i>Insurance, pension schemes</i>	568	86.2	6.6	568	86.2	5.3
B.90	Net Worth	8 642	31.0	100.0	10 700	42.3	100.0

Source: Own research, CZSO

2.1 Dwellings

Dwellings represent 46% of the net worth of Czech households. Net stock of dwellings is calculated by perpetual inventory method (PIM). The depreciation function is linear, retirement pattern is lognormal derived from average service life of 80 years (by blocks of flats) or 90 years (by family houses).

The original ground of application of PIM on dwellings was an estimation of gross fixed stock of dwellings at the end of year 2000. For this purpose, the following data sources were used:

- Census was used for regional structure, division into family houses and flats, age structure and square meters of living area (Census 2001).
- Compilation and evaluation of dwellings gross stock was done separately for two categories:
 - For municipalities with more than 50,000 inhabitants and regions Prague-west and Prague-east the prices were taken from tax return statistics.
 - For municipalities with less than 50,000 inhabitants, the prices were taken from annual statistical survey on completed houses.
- In cooperation with external Research institute for rationalization in building industry the quality change was implemented into the computation of the value of dwellings from different periods, the quality coefficients used reflect the construction material etc. Also the sewerage, gas pipeline and water supply connections are reflected in the quality coefficients.
- Gross fixed capital formation (GFCF) of dwellings divided to flats and family houses based on surveyed data.

As a result the value of gross stock of dwellings at the end of year 2000 was obtained in an age-and-type (family house x flat) structure. The division into institutional sectors and subsectors was done on the basis of census. The ratios of book keeping gross stocks were used for division into industries.

The gross stock was used for construction of artificial time series of gross fixed capital formation in dwellings before 1995. The gross stock divided into age groups was transformed into artificial GFCF by backward calculation of retirement (from retirement function it is easy to compute the percentage of already retired part). The shape of the series is based on number of newly constructed dwellings and on their age structure. Finally, these time series, data on GFCF and price indices in 2011 are used for PIM calculations in order to compile a balance sheet of dwellings.

In 2014 all the data used for the above described method were updated based on new data from the Census 2011. The results of this census showed that the sectoral / ownership structure of the housing stock compared to the last census changed significantly. The CZSO does not have sufficient quality information on the privatization and liquidation of the housing stock in the years between censuses. That is why the calculation is made firstly for the total economy, and then the results are allocated to subsectors by data from the censuses annually updated by figures about new construction of dwellings from a statistical survey. Finally an adjustment to stock of dwellings owned by non-residents is done: these are taken out of household sector and added to foreign controlled non-financial corporation subsector.

Table 8 Households sector – dwellings, current prices, CZK bill.

	1993 to 1995	1996 to 2000	2001 to 2005	2006 to 2010	2011	2012	2013
Opening stock	1 172.9	1 491.7	2 385.7	2 949.2	3 897.0	4 012.5	3 974.2
GFCF	97.5	314.5	473.7	762.4	140.5	125.6	126.6
CFC	-78.8	-200.3	-262.4	-366.3	-81.1	-80.7	-81.5
Other changes in volume	-192.0	66.4	-11.6	50.4	17.3	0.2	3.7
Revaluation	492.1	713.3	363.9	501.3	38.8	-83.4	-32.3
Closing stock	1 491.7	2 385.7	2 949.2	3 897.0	4 012.5	3 974.2	3 990.7
Share of NW (%)	41.1	45.7	47.5	46.9	47.4	46.0	45.4

Source: Own research, CZSO

The new results in very aggregate form for the period 1993 to 2013 can be seen in Table 8. Gross fixed capital formation looks very high (annually in average almost 4% to opening stock), it is mainly due to privatisation of flats – municipality and cooperative flats. Other volume changes cover destroyed dwell-

ings due to catastrophic events, e.g. floods. The accumulated impact of dwellings revaluation is bigger than the amount of gross fixed capital formation in dwellings. Almost the same amount of changes in value of housing stock is the cumulated result of revaluation. Price indices are differing by region and by type of dwellings. Valuation of stock is one of the weakest part of our calculation in replacement or market value because of the danger of double counting of underlying land.

2.2 Forests

Forests are important national resource for the Czech Republic; therefore, nationwide inventory of forest are performed regularly. More than 20% of all forestry land are owned by households. Current estimate of the value of forests is based on the results of the nationwide inventory conducted during 2001–2004. Presently, another national inventory of forests is conducted (2011–2015). It was completed by the end of 2014; the results will be processed, evaluated and published by the end of 2015, so we assume that its results will be used in the national accounts for the year 2016.

An estimate of the value of forests in the Czech national accounts is now carried out by applying the average prices of raw wood on stock of standing timber in cubic metres per kind of timber. Both methodology and current annual valuation are elaborated and processed for the CZSO by two external research institutes. So the CZSO replaced previously used method of valuation based on discounted future proceeds from a timber sale. This method was, in theory, more correct, but more demanding and especially negatively accepted by users. Therefore, we do not plan to reintroduce it.

The calculation is done for the total economy. The estimated values are then allocated proportionally to institutional sectors. Sector structure is derived from the ownership of forest land in hectares. Whereas the structure of standing timber, growth and woodcutting are calculated only for the total economy, it does not reflect the quality or value of the standing timber in the household sector separately.

Table 9 Households sector – forestry, current prices, CZK bill.

	1993 to 1995	1996 to 2000	2001 to 2005	2006 to 2010	2011	2012	2013
Opening stock	134.9	137.9	170.5	142.5	155.9	201.4	207.6
Changes in inventories	1.0	3.5	2.1	3.3	1.0	0.8	1.3
Other changes in volume	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Revaluation	1.9	29.1	-30.1	9.8	44.4	5.4	11.3
Closing stock	137.9	170.5	142.5	155.9	201.4	207.6	220.1
Share of NW (%)	3.8	3.3	2.3	1.9	2.4	2.4	2.5

Source: Own research, CZSO

The final data for the period 1993 to 2013 are shown in aggregated form in table 9. Changes in inventories represents the balance of the forest here (growth and woodcutting of standing timber), as well as net sales or purchases of forests by households. Other changes in volume of forests are negligible, however, changes in the valuation of stock play important role, due to changes in prices of wood. The current method of calculation is sensitive to fluctuations in the market prices of raw wood.

2.3 Land

The value of the land recorded in the national accounts represents more than 7% of the national wealth. The land is owned mainly by households (55% of total value of land), by non-financial corporations (26%) and by government institutions (18%). In households sector the value of land represents more than 13% of their net worth. Table 10 provides an overview of the stock and changes in stock of land owned by households during last twenty years period.

Table 10 Households sector – land, CZK bill.

	1993 to 1995	1996 to 2000	2001 to 2005	2006 to 2010	2011	2012	2013
Opening stock	635.3	665.9	670.3	706.7	1 093.7	1 116.7	1 133.7
Net acquisition of land	-0.1	-11.9	-11.3	7.0	1.7	1.7	3.4
Other changes in volume	0.4	15.6	-0.6	6.1	2.2	0.6	1.9
Revaluation	30.3	0.7	48.4	373.8	19.2	14.8	33.9
Closing stock	665.9	670.3	706.7	1 093.7	1 116.7	1 133.7	1 172.9
<i>Share of NW (%)</i>	<i>18.3</i>	<i>12.8</i>	<i>11.4</i>	<i>13.2</i>	<i>13.2</i>	<i>13.1</i>	<i>13.3</i>

Source: Own research, CZSO

The value of land is estimated in three stages. The first and second stages are carried out without breakdown by institutional sectors, so acquisitions and disposals of land between sectors and subsectors can be ignored. The allocation of the results to institutional sectors and subsectors and balancing of acquisitions and disposals of land among sectors and subsectors is made at the third stage.

The first stage represents a compilation of the balance for each type of land and regions in hectares. The difference between opening and closing amount of various types of land are regarded as a change in use of land. Also economic appearance and disappearance of land due to refining of total area recorded in State cadastre are there.

The second stage represents a conversion of the balances for each type of land in hectares to value expression by applying average prices for each type of land and also structured by regions, received from price statistics.

The calculation is carried out in basic breakdown of the land as follows:

- agricultural land x the average purchases prices of agricultural land,
- non-agricultural land:
 - land underlying buildings and courtyards x the average purchases prices of building site area,
 - forestry land x the average purchase price of forestry land,
 - surface water x the average price of water and other areas (estimated for total economy by data available on the internet),
 - other land x the average price of water and other areas (estimated for total economy by data available on the internet).

Changes in the use of land and related changes in land prices are intercepted as the changes in classification of land (K.122). Changes due to refining of total area are also valued and recorded as economic appearance and disappearance of land (K.3 or K.62). Finally, the difference between closing and opening stock and total other volume changes are interpreted as revaluation (K.11).

The third stage covers the balancing of acquisitions and disposals of land between sectors and subsectors (data are mainly from statistical surveys and tax returns for real estate transfer tax) and the allocation of stock, other volume changes and revaluation for total economy to individual institutional sectors and subsectors.

For the distribution of agricultural land, data from the survey made by agriculture statistics and information from the annual reports of the State Land Fund on an area of land under its records are used. The agriculture statistics survey shows that the majority of agricultural land is used by legal persons, but mostly it is rented out. Major the part of this rented land is owned by natural persons and, therefore, the value of agricultural land is the largest in the households sector.

Forestry land is divided into institutional sectors based on the information received from the Forest Management Institute that controls inter alia the national inventory of forests. According to this institute about 20.6% of the area of forest land belongs to the household sector.

Given the prices the value of the land underlying buildings and courtyards makes more than 70% of total value of all land in the Czech Republic (majority is owned by households because of land under houses). The value of built-up land in households sector is estimated based on the number of dwellings, average built-up area and the average price of a built-up area. The calculation is performed separately for family houses and apartment buildings. The rest of the value is allocated mostly to the non-financial corporations sector and government institutions in accordance with the statistical survey data. Therefore, there is a special project aimed on usage of individual cadastre data providing information about ownership, type of land and the character of its use.

2.4 Currency and deposits less loans (credits)

Currency and deposits reduced by taken loans represent 11% of net worth of households. To estimate the amount of currency held by households, deposits and loans mainly the data from bank statistics and statistical surveys are used, that are finely balanced in the whom to whom matrixes. For each asset, the separate matrix is prepared and balanced. For the estimation of the loans given to households, a special database kept by the Czech National Bank is used.

Table 11 Households sector – currency and deposits less loans, CZK bill.

	1993 to 1995	1996 to 2000	2001 to 2005	2006 to 2010	2011	2012	2013
Opening stock	184.5	353.5	780.9	781.2	891.7	947.3	973.9
Transaction	159.8	409.3	17.7	24.6	37.6	21.0	4.1
Other changes in volume	10.8	7.9	8.0	103.5	5.2	4.9	4.9
Revaluation	-1.7	10.3	-25.4	-17.6	12.7	0.8	7.3
Closing stock	353.5	780.9	781.2	891.7	947.3	973.9	990.1
<i>Share of NW (%)</i>	<i>9.7</i>	<i>15.0</i>	<i>12.6</i>	<i>10.7</i>	<i>11.2</i>	<i>11.3</i>	<i>11.3</i>

Source: Own research, CZSO

The share of net deposits (reduced by loans) on net worth of households was very high in the late nineties, and then the Czech households had been less saving and more taking loans in the context of increasing investments to dwellings and rapidly increasing expenditure on final consumption.

Deposits as well as loan stocks of households were also significantly affected by their revaluation and other changes in the volume, see Table 11. Revaluation refers to deposits of or loans to households saved/received in foreign currency as a result of changes in the exchange rate of the Czech Crown to foreign currencies, in particular USD, DEM, EUR and CHF. In particular writing-off or writing-down of bad debts and financial leasing by creditors were included in the other changes in volume, and in 2007, also newly included deposits of Czech households abroad. These deposits are estimated based on information about the taxation of interest and the average interest rates in countries where these deposits are located.

2.5 Equity and investment funds shares

Equity and investment funds shares represent by officially published data about 12% of net worth of households – only 6% of them were allocated in listed shares, 31% in unlisted shares, 46% in other equity and 17% in investment fund shares in 2012. In total, their role in net equity of households has been falling continuously since 1995 in connection with sale of shares acquired in the voucher privatisation, and also as a result of privatisation of cooperative apartments. However, investment fund shares experienced specific development – long-term growth was affected by a large decline during two financial crises in 1997–1999 and 2007–2011.

A significant part of the present value of the equity and investment funds shares held by households is not the result of transactions, but the revaluation and other changes in the volume, see Table 12.

Table 12 Households sector – equity and investment funds shares, Czech Republic, CZK bill.

	1993 to 1995	1996 to 2000	2001 to 2005	2006 to 2010	2011	2012	2013
Opening stock	438.3	658.4	707.5	857.6	1 144.6	958.5	1 027.3
Transaction	282.2	-80.6	132.7	1.4	-23.0	15.3	-17.7
Other changes in volume	-60.7	62.3	1.2	154.9	-184.4	50.8	-4.2
Revaluation	-1.4	67.4	16.2	130.6	21.4	2.7	16.3
Closing stock	658.4	707.5	857.6	1 144.6	958.5	1 027.3	1 021.7
<i>Share of NW (%)</i>	18.1	13.5	13.8	13.8	11.3	11.9	11.6

Source: Own research, CZSO

The experimental reallocation of the net worth by application of the principle “wealth does not belong to company but to its owners” shows that the Czech households are actually richer in the amount of revaluated other equity of owned companies. See chapter 1.3.

2.6 Insurance and pension entitlements

Insurance and pension entitlements are quickly and constantly increasing asset in possession of Czech households. Their share in the worth of households increased from 1.6% in beginning of 1993 to the current 6.9%, see Table 13.

Table 13 Households sector – insurance schemes, Czech Republic, CZK bill.

	1993 to 1995	1996 to 2000	2001 to 2005	2006 to 2010	2011	2012	2013
Opening stock	44.4	74.3	153.7	318.3	512.2	539.6	568.1
Transaction	20.7	84.1	172.0	200.5	29.4	34.2	42.5
Other changes in volume	9.3	-4.7	-7.5	-3.3	-2.1	-5.7	-0.6
Revaluation	0.0	0.0	0.0	-3.2	0.0	0.0	0.0
Closing stock	74.3	153.7	318.3	512.2	539.6	568.1	610.0
<i>Share of NW (%)</i>	2.0	2.9	5.1	6.2	6.4	6.6	6.9

Source: Own research, CZSO

Our estimation of their stocks, transactions and other changes for households is conducted on the basis of administrative data from insurance companies and pension funds, or based on data from supervision conducted by the Czech National Bank. The share of net equity of households in life insurance entitlements (AF.62) and in pension entitlements (AF.63) is 100%, because the non-resident households are not assumed in any life insurance or participation in pension funds. The share of households in “non-life insurance technical reserves” (AF.61) is 33%. Allocation to sectors is made according to the percentage of premiums received.

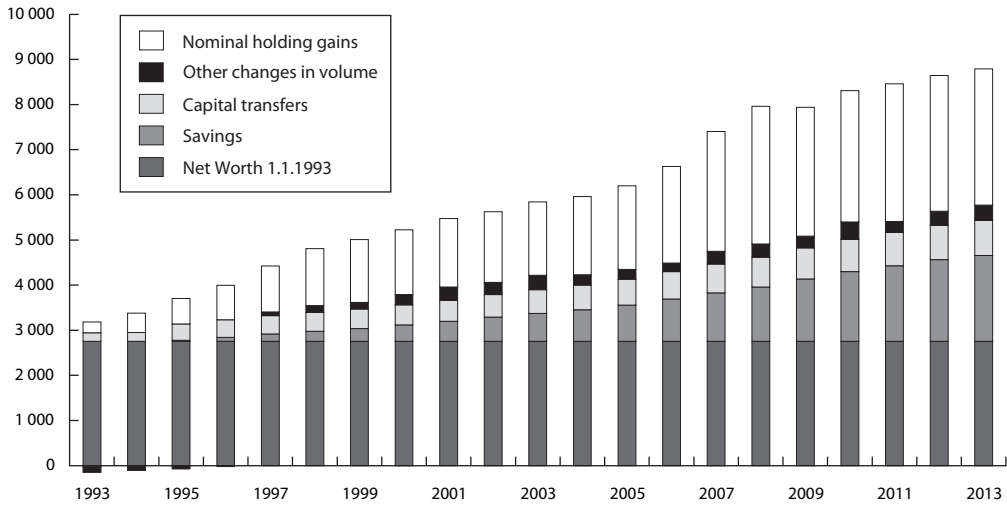
The big other change in the volume in household sector is mainly caused by methodological correction of “non-life insurance technical reserves” – crossed from the net to the gross reserves, i.e. incl. reserves of reinsurers. Only one record in the revaluation account was made in 2009 for pension funds due to the revaluation of their assets. In fact, however, this is an extraordinary change, which should be recorded in other changes in volume account.

3 APPRECIATION/DEPRECIATION OF HOUSEHOLD WEALTH

Where-from the households wealth comes? Generally, or in simple terms, the wealth originated from accumulated not consumed disposable income, i.e. from savings. However, there are other factors in re-

ality – capital transfers from other institutional sectors, inflation or changes in prices of different assets and other volume changes in ownership of assets. 31% of the value of household wealth in 2013 came from a time before the formation of the independent Czech Republic in 1993 (see Figure 1).

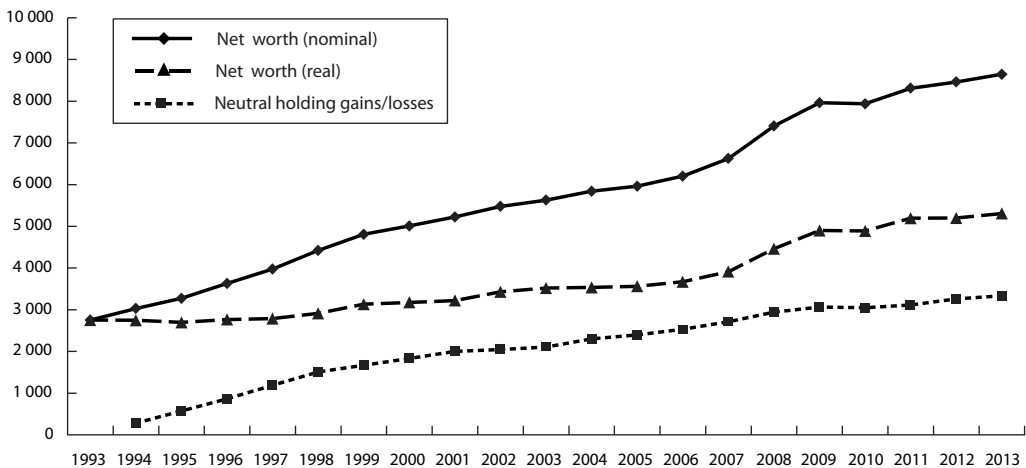
Figure 1 Household wealth comes from, CZK billions



Source: Own research, CZSO

A further 9% has its origin in capital transfers, in particular from voucher privatization in the nine-tieth, from restitution and privatization of cooperative and municipal flats for lower prices than market ones. The small part, 4%, originated from other volume changes – mainly due to consideration of land that was not recorded before at all, and also due to writing-off or writing-down of bad debts.

Figure 2 Net worth of Czech households in nominal and real terms, CZK billions

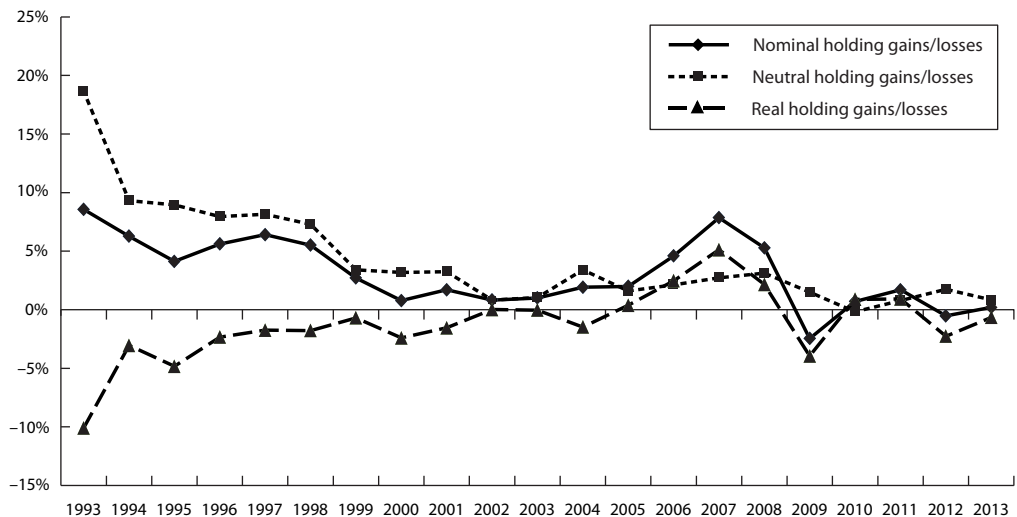


Source: Own research, CZSO

The main part of the value of household wealth in 2013 came from revaluation of existing assets and liabilities held by households. Nominal holding gains accumulated during the period 1993 to 2013 represented 34% of the total value of household wealth. However, these nominal holding gains cover also neutral holding gains caused due to changes in the general price level (measured by the index of the final national uses, excluding changes in inventories). So, the total wealth of Czech households increased in nominal terms 3.2 times, but after deduction of the neutral holding gains the real value of wealth increased only 1.8 times. The trend of nominal and real net worth of Czech households is seen in Figure 2. Or otherwise, increasing the value of the wealth owned by Czech households was covered from 64% by increasing in the general price level.⁶

For analytical evaluation of the development of net wealth for individual institutional sectors it is extremely important to record holding gains for all assets and liabilities and to show the nominal and real appreciation or depreciation. The Figure 3 shows that the real appreciation of the assets of Czech households in total, took place six times only – in the period 2006–2008 and in the years 2010 and 2011. Over the other fifteen years, the value of household wealth declined in relative terms.

Figure 3 Net worth of Czech households in nominal and real terms, CZK billions



Source: Own research, CZSO

CONCLUSIONS

The System of National Accounts provides a wealth of information on the status and development of the household sector. However, comprehensive analyses of the stock and development of the Czech household's wealth are not frequent. This is not only due to preferences in production/consumption analyses, but also because the figures on the stock of the wealth are still of lower quality, international comparability is missing, and most importantly, they lack social dimension.

Improving data quality is promising. In recent years it was caused particularly by improving the valuation of land and houses. The project focused on the use of the Cadastre data in the land continues. In the coming years, the experimental work on the valuation of equity will bring official results – and we

⁶ The issue of nominal, neutral and real holding gains was deeply presented in Rybáček (2010).

can expect significant rewriting of currently presented levels of the Czech household's wealth. Projects focused on international comparisons of household wealth are currently organized by OECD and in the Euro area, but so far without the participation of the CZSO.

Social dimension of wealth is the most serious weakness in the Czech National Accounts. Because during the last twenty years former homogenous Czech households have been differentiating, traditional views on social groups are unsatisfactory. Social statistics respond to this important trend of the Czech society inadequately, national accounts not at all. Although in current practice of the CZSO the household sector is divided to two subsectors – households as consumers and households as entrepreneurs, but the original intention of this breakdown was the technique of estimates of some items and accounts. Now, of course, it is also used for analytical reasons, even if it is not too appropriate because one institutional unit (entrepreneurs) is artificially split into businesses and consumers. This breakdown does not provide any information about the development and structure of the wealth of individual social groups of households. That is why, the CZSO has launched the experimental work on the breakdown of the household sector according social and income groups. At present, however, it is still too early to talk about the results.

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