

Accounting for Trends in Charitable Tax Deductions: A Look at the District of Columbia

Federation of Tax Administrators
October 7, 2013



District of Columbia

Betty Alleyne & Farhad Niami
Office of Revenue Analysis
DC Office of the Chief Financial Officer

Quentin Wodon*, World Bank
Judy Mulusa, Howard University
Crystal Cong, University of Chicago

The views expressed here are those of authors only and need not to represent the views of organizations that they are affiliated with.

Charitable Contributions

The federal Charitable Contribution Law was enacted in 1917

It is one of the largest tax expenditures at the state and federal levels (estimated to be \$43.6 billion during FY 2014 at the federal level and \$51.8 billion at the state and local levels. For the District of Columbia it was \$54.5 million in FY 2012), or two thirds of the cost of mortgage deduction (\$87.0 million)

It is a crucial source of revenue that sustains the charitable nonprofit sector

It has recently been the subject of debate whether it makes sense to reform it in light of budget deficits

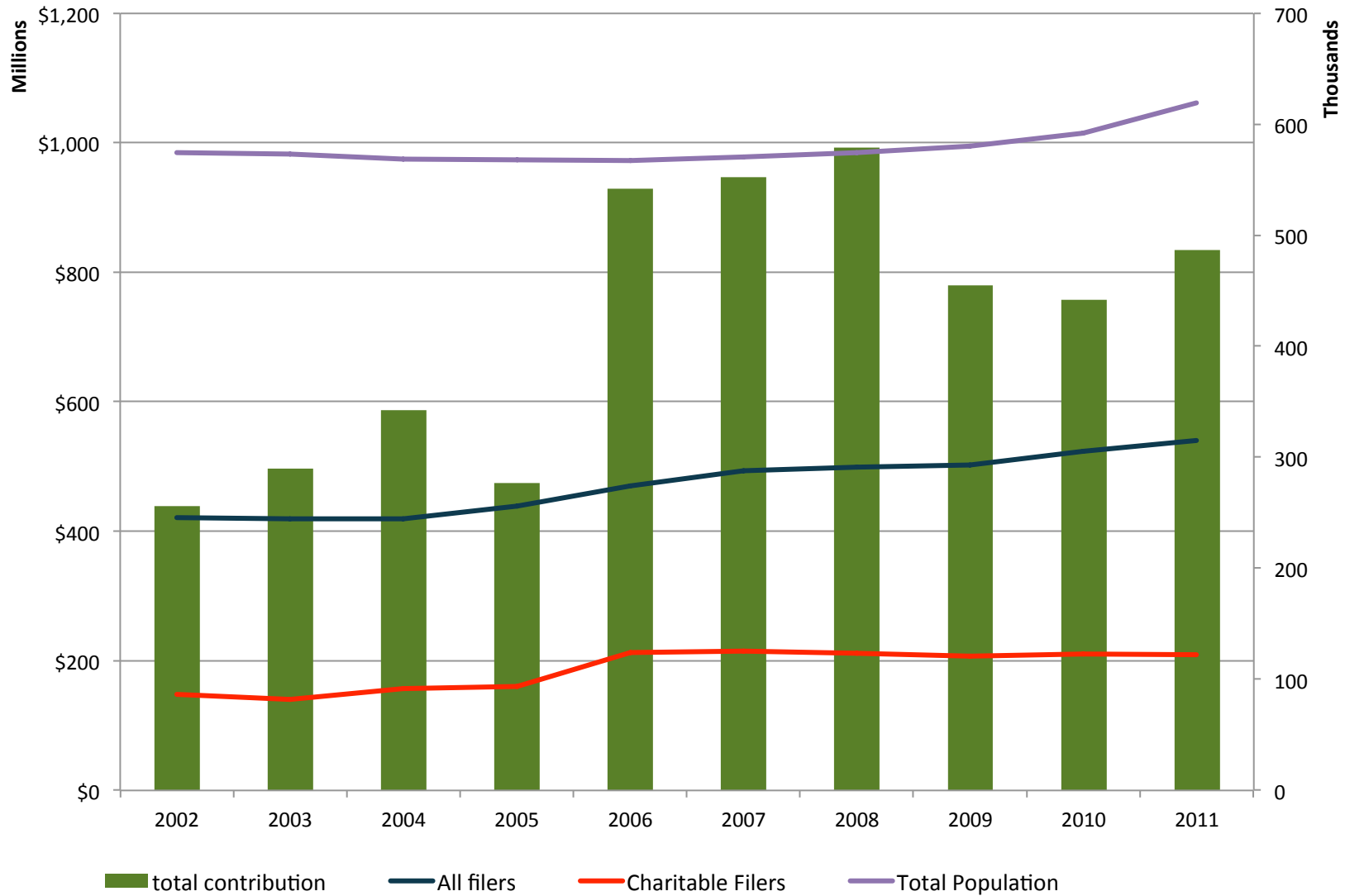
Charitable Contributions

The primary objective of this paper is to help policy makers to have a better understanding of recent changes in the level of deductions, over time, and the factors that led to these changes.

This paper relies on a simple multiplicative decomposition to assess key factors and trends in charitable tax deductions with an application to data from the District of Columbia over the period of 2002-2011, thus including the recent recession.

Decomposition method, a useful framework to study disparities, splits a time series into its component parts. A difference between two groups can be partitioned into both differing characteristics and differing effects between the two groups.

General Trend in Charitable Deduction

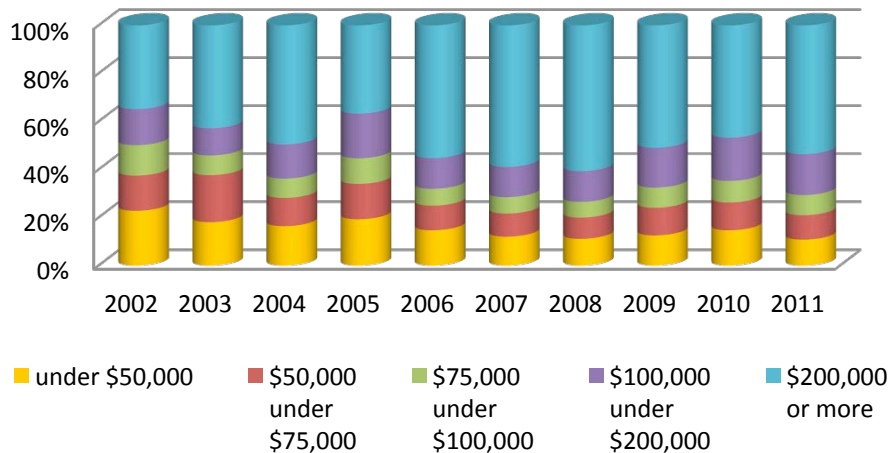


Year to year Results

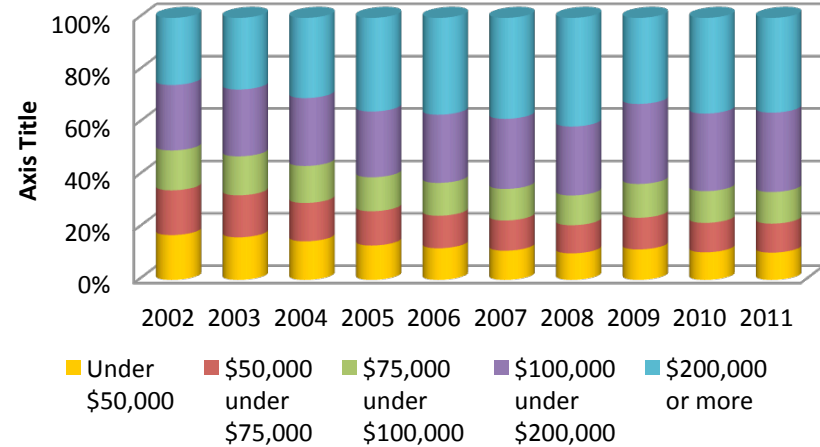
- Four different phases identified
- 2002-2005
 - little increase in charitable deductions , due to population and incomes declining.
- 2005-2006
 - rebound. Jobs, stock market, Katrina Emergency Tax Relief Act of 2005(KETRA), Gulf Opportunity Zone Act of 2005, extending provisions to areas affected by Hurricanes Rita and Wilma.
- 2007-2008
 - recession hits but deductions sustained by growth in population, steady share of filers, filers claiming higher deductions.
- 2009-2011
 - Drop in 2009, due to additional recessionary pressures, and fluctuations in 2010 and 2011.

Trends in Charitable Tax Deductions

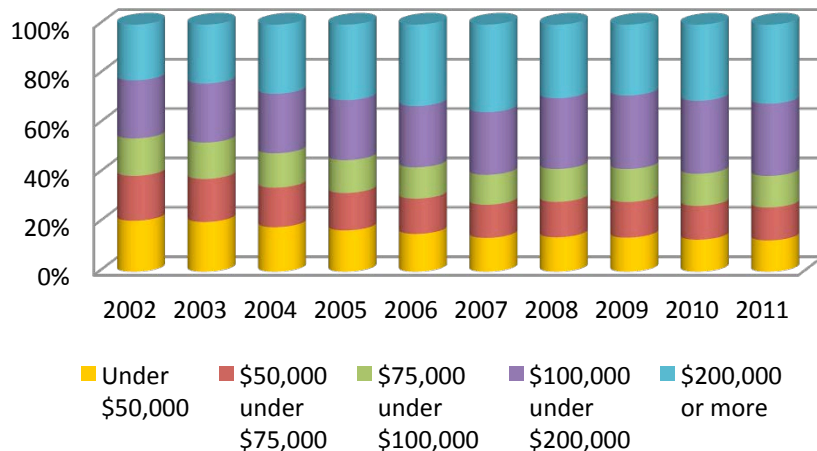
DC - Total Contribution by Income Group



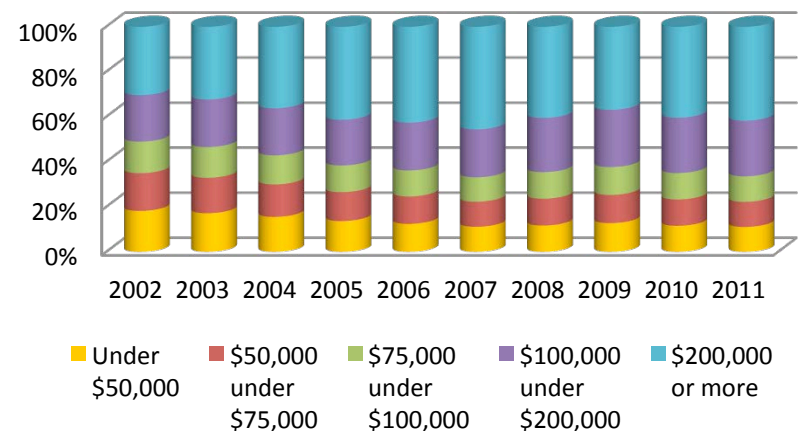
VA - Total Contribution by Income Group



MD - Total Contribution by Income Group

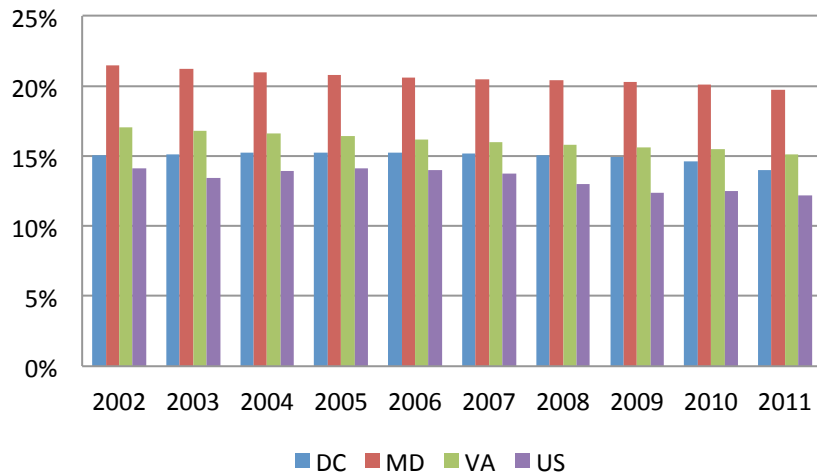


US - Total Contribution by Income Group

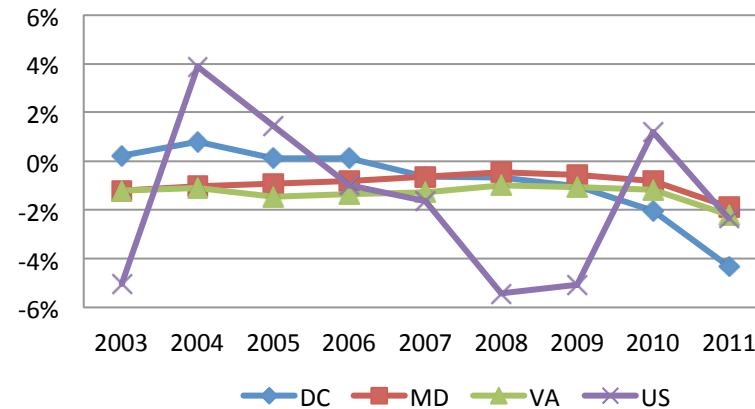


Trends in Charitable Tax Deductions

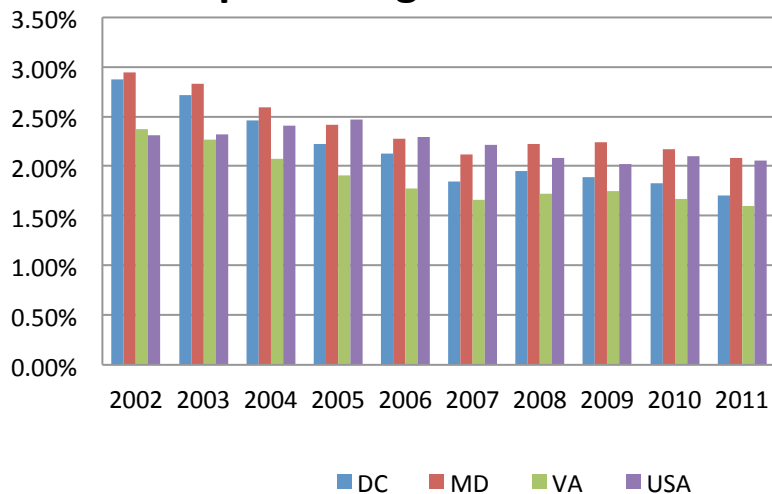
Share of charitable filers in percentage of total population



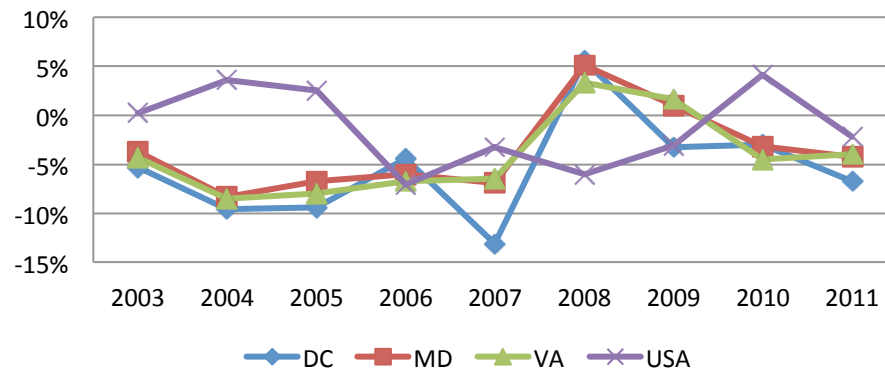
Growth rate of share of charitable filers in percentage of total population



Share of charitable contribution in percentage of total FAGI



Growth rate of share of charitable contribution in percentage of total FAGI



Statistical Decomposition

A comparative analysis that looks at differences between values of aggregate demographic measures.

The aggregate differences are due to impacts of underlying factors.

Decomposition estimates the additive contributions of differences between values of factors.

The aggregate measure is a dependent function of the factors.

Decomposition is a purely descriptive tool that is not meant to imply causality.

Decomposition of Changes in Charitable Deductions

- Decomposition Methodology*

$$TD = \left(P \times \frac{F}{P} \times \frac{D}{F} \right) \times \left(AY \times \frac{AD|D}{AY} \right)$$

- TD :Total deductions
- *P*:DC population
- *F*:Number of income tax filers
- *D*:Number of filers who claim a charitable deduction
- *AY*: Average FAGI
- *AD|D*: Average charitable deduction claimed among filers who claim a charitable deduction
- *Multiplicative Decomposition was initially proposed by Wodon for the analysis of mortgage deductions in 2013.

Underlying Factors

Highlight factors affecting Charitable Deductions

- change in the population of the District
- change in the share of the population that files
- changes in the share of filers claiming a charitable tax deduction
- change in the average income of filers
- change in the average deduction of filers among those who deduct

Decomposition for Small Changes

Proportional change over time for small changes:

$$\begin{aligned} \Delta TD / TD_s \cong (TD_t - TD_s) / TD_s \approx & (\ln P_t - \ln P_s) + \left(\ln \frac{F_t}{P_t} - \ln \frac{F_s}{P_s} \right) \\ & + \left(\ln \frac{D_t}{F_t} - \ln \frac{D_s}{F_s} \right) + (\ln AY_t - \ln AY_s) + \left(\ln \frac{AD | D_t}{AY_t} - \ln \frac{AD | D_s}{AY_s} \right) \end{aligned}$$

The potential usefulness of the decomposition is that it highlights five different factors that may affect deductions: Changes in population, share of the population that files, share of filers claiming charitable deductions, avg. income of filers, and the avg. deduction of filers among those who deduct.

Decomposition by Income Group

Denoting different tax filers in different income groups of $i=1, \dots, n$, the decomposition is;

$$TD_t = \sum_{i=1}^n TD_{it} = \sum_{i=1}^n \left(P_t \times \frac{F_t}{P_t} \right) \left(\frac{F_{it}}{F_t} \times \frac{D_{it}}{F_{it}} \right) \left(AY_{it} \times \frac{AD | D_{it}}{AY_{it}} \right)$$

- F_i/F : share of filers in different groups
- Income threshold
 - \$50,000 or less
 - \$50,000 to \$75,000
 - \$75,000 to \$100,000
 - \$100,000 to \$200,000
 - \$200,000 to \$500,000
 - \$500,000 and more.

Conclusion

- The District is attracting a more wealthy population
- Between 2002 and 2011 charitable deductions increased 50% in real terms (from \$570 mil. To \$835 mil.), an annual growth rate of 4.3 percent, almost identical to the annual growth rate in the logarithmic terms (4.25 percent), due to:
 - population growth (0.83 percent, annually)
 - increase in the share of the population filing tax returns (1.93 percent, annually)
 - increase in the share of filers claiming the deduction (1.09 percent, annually)
 - increase in the average deduction among claimants as a share of the average FAGI (2.08 percent, annually)
 - However, recent decrease in the average income of filers offset some of the effects of the other variables (-1.70 percent, annually)

$$(0.83\% + 1.93\% + 1.09 + 2.09\% - 1.71\%) = 4.25\%$$

Conclusion – cont.

- On the year-to-year basis, four different phases identified;
- 2002-2005
 - charitable deductions were almost flat, (from \$569.7 mil. to \$560.8 mil.).
- 2005-2006
 - Almost doubled in real terms, from \$560.8 mil. to \$1,058.7 mil. Avg. adjusted income increased from \$77,287 to \$93,489 (in 2011 US\$).
- 2007-2008
 - recession hits but deductions sustained by growth in population, steady share of filers, filers claiming higher deductions.
- 2009-2011
 - Deductions remained flat mostly due to additional recessionary pressures, and fluctuations in 2010 and 2011.

Conclusion – cont.

- Decomposition by year revealed some of the complex circumstances that led to these changes
- Decomposition by income group suggested a dramatic increase in the role of top income earners (\$500K and more) in the overall charitable deduction in the District increasing by 11.0%, annually.
- Deductions in the bottom three income brackets have actually fell between 2002 and 2011.
- While the contribution share of top income group in 2002 was 22.6% of the total deductions (proportionally similar to that of the bottom income group), its share in 2011 increased to 40.5%, while those of bottom income group decreased to 10.8%).

Table 1: Summary Results for the Period as a Whole, 2002-2011 (%)

	All	<50k	50k-75k	75k-100k	100k-200k	200k-500k	>500k
Charitable deductions							
Initial value, 2002 (\$ millions, in US\$ 2011)	569.7	130.0	83.7	72.1	85.6	69.3	128.9
Final values, 2011 (\$ millions)	834.9	90.4	85.1	70.1	142.1	109.0	338.3
Annual growth rate (*) (%)	4.31	-3.71	0.58	-0.07	5.99	5.52	11.10
Decomposition initial values, 2002							
Population (thousands)	574.5	-	-	-	-	-	-
Filers (thousands)	245.8	-	-	-	-	-	-
Filers by income group (thousands)	-	169.5	31.9	15.8	19.7	6.8	2.0
Filers itemizing deductions (thousands)	86.6	35.0	18.4	11.0	15.2	5.5	1.6
Average income (\$ thousands, real 2011) (**)	76,312	27,580	79,204	111,599	176,304	375,344	1,854,430
Average deduction if >0 (\$ thousands, real 2011)	6.6	3.7	4.6	6.6	5.6	12.6	82.9
Decomposition final values, 2011							
Population (thousands)	619.0	-	-	-	-	-	-
Filers (thousands)	315.4	-	-	-	-	-	-
Filers by income group (thousands)	-	176.7	48.1	27.9	41.4	17.0	4.3
Filers itemizing deductions (thousands)	122.6	28.7	19.9	18.6	34.1	16.5	4.7
Average income (\$ thousands, real 2011)	84,986	21,260	61,179	86,412	137,773	287,923	1,656,000
Average deduction if >0 (\$ thousands, real 2011)	6.8	3.1	4.3	3.8	4.2	6.6	72.3
Decomposition of growth rate							
Population (%)	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Filers/population (%)	1.94	1.94	1.94	1.94	1.94	1.94	1.94
Filers group share (%)	-	-2.31	1.80	3.51	5.49	7.41	5.54
Itemizing deductions/filers (%)	1.09	-2.66	-3.68	-0.38	0.74	2.02	3.92
Average income (%)	-1.70	-5.79	-5.76	-5.74	-5.63	-5.84	-4.15
Average deduction/income (%)	2.08	3.94	5.06	-0.47	2.26	-1.33	2.65
Sum of annual growth rates (*) (%)	4.25	-4.04	0.18	0.31	5.63	5.02	10.72

Source: Authors' computations.

Note: (*) the annual rate of change is the compounded year-on-year change estimated through a power function; it is not the cumulative change between the initial and final years divided by the number of years between the two dates. (**) In the base year 2002, the average incomes by group may be higher than the upper bound because the average incomes are adjusted for inflation to reflect US\$ 2011 values, while the interval bounds for the groups are not adjusted.

Appendix Table: Detailed Results by Year and for the Decade as a Whole

	<i>P</i>	<i>F/P</i> (%)	<i>F_i/F</i> (%)	<i>D_i/F_i</i> (%)	<i>Y_i</i> (\$)	<i>AD D_i/Y_i</i> (%)	<i>G_i</i> (\$M)		<i>P</i>	<i>F/P</i> (%)	<i>F_i/F</i> (%)	<i>D_i/F_i</i> (%)	<i>Y_i</i> (\$)	<i>AD D_i/Y_i</i> (%)	<i>G_i</i> (\$M)
All – Levels								All - Growth rates (%)							
2002	574,504	42.8%	-	35.2%	76,312	6.6%	569.7	2002-03	-0.23	-0.23	-	-5.24	0.21	17.91	12.41
2003	573,158	42.7%	-	33.4%	76,474	7.9%	627.4	2003-04	-0.82	0.83	-	11.76	9.61	-4.66	16.72
2004	568,502	43.0%	-	37.6%	84,185	7.6%	721.4	2004-05	-0.13	4.58	-	-2.83	-8.55	-14.34	-21.26
2005	567,754	45.1%	-	36.6%	77,287	6.6%	560.8	2005-06	-0.11	6.99	-	21.53	19.03	19.64	67.08
2006	567,136	48.3%	-	45.3%	93,489	8.0%	1,058.7	2006-07	0.62	4.42	-	-4.13	0.90	0.06	1.87
2007	570,681	50.5%	-	43.5%	94,333	8.0%	1,041.2	2007-08	0.65	0.31	-	-2.66	-13.02	19.51	4.79
2008	574,404	50.7%	-	42.4%	82,817	9.7%	1,045.3	2008-09	1.01	-0.26	-	-2.67	-4.85	-17.43	-24.21
2009	580,236	50.5%	-	41.2%	78,892	8.2%	818.9	2009-10	2.05	2.15	-	-2.61	4.77	-9.16	-2.82
2010	592,228	51.6%	-	40.2%	82,745	7.5%	782.8	2010-11	4.42	-1.31	-	-3.32	2.67	7.23	9.69
2011	619,020	50.9%	-	38.9%	84,986	8.0%	834.9	Average	0.83	1.94	-	1.09	1.20	2.08	7.14
								Cumulative	0.83	1.96	-	1.10	1.20	2.11	7.20
Below 50k - Levels								Below 50k - Growth rates (%)							
2002	574,504	42.8%	68.98%	20.65%	27,580	10.4%	130.0	2002-03	-0.23	-0.23	-1.38	-13.28	-0.75	5.08	-10.81
2003	573,158	42.7%	68.03%	18.08%	27,373	10.9%	113.5	2003-04	-0.82	0.83	-3.56	8.00	-1.43	4.03	7.06
2004	568,502	43.0%	65.65%	19.59%	26,985	11.4%	118.5	2004-05	-0.13	4.58	-1.90	-8.69	0.90	0.23	-5.02
2005	567,754	45.1%	64.41%	17.96%	27,228	11.4%	108.4	2005-06	-0.11	6.99	-4.55	23.84	-6.29	19.98	39.85
2006	567,136	48.3%	61.54%	22.79%	25,569	13.9%	155.8	2006-07	0.62	4.42	-2.80	-8.97	-2.38	-8.97	-18.08
2007	570,681	50.5%	59.84%	20.84%	24,966	12.7%	125.5	2007-08	0.65	0.31	-1.39	-11.20	-8.31	17.10	-2.84
2008	574,404	50.7%	59.01%	18.63%	22,976	15.1%	116.7	2008-09	1.01	-0.26	-1.68	-5.66	-2.86	-2.76	-12.21
2009	580,236	50.5%	58.03%	17.61%	22,328	14.7%	103.1	2009-10	2.05	2.15	-2.00	-2.31	-0.67	13.50	12.72
2010	592,228	51.6%	56.88%	17.20%	22,179	16.8%	115.2	2010-11	4.42	-1.31	-1.50	-5.66	-4.23	-12.71	-20.99
2011	619,020	50.9%	56.03%	16.26%	21,260	14.8%	90.4	Average	0.83	1.94	-2.31	-2.66	-2.89	3.94	-1.15
								Cumulative	0.83	1.96	-2.28	-2.62	-2.85	4.02	-0.94
50k to 75k – Levels								50k to 75k - Growth rates (%)							
2002	574,504	42.8%	12.98%	57.57%	79,204	4.4%	83.7	2002-03	-0.23	-0.23	1.80	-5.42	-2.76	48.06	41.21
2003	573,158	42.7%	13.22%	54.53%	77,051	7.2%	122.9	2003-04	-0.82	0.83	1.49	8.42	-2.75	-41.38	-34.21
2004	568,502	43.0%	13.42%	59.31%	74,961	4.7%	84.9	2004-05	-0.13	4.58	3.24	-5.56	-3.81	2.79	1.11
2005	567,754	45.1%	13.86%	56.11%	72,162	4.9%	82.6	2005-06	-0.11	6.99	2.95	13.49	-3.49	11.29	31.12
2006	567,136	48.3%	14.27%	64.21%	69,688	5.5%	108.8	2006-07	0.62	4.42	1.66	-9.94	-3.56	2.25	-4.55
2007	570,681	50.5%	14.51%	58.13%	67,254	5.6%	100.4	2007-08	0.65	0.31	1.95	-7.81	-4.43	5.72	-3.62
2008	574,404	50.7%	14.80%	53.77%	64,337	5.9%	92.6	2008-09	1.01	-0.26	2.59	-5.78	-0.24	4.59	1.91
2009	580,236	50.5%	15.19%	50.75%	64,181	6.2%	94.2	2009-10	2.05	2.15	-0.20	-7.42	-1.55	2.96	-2.01
2010	592,228	51.6%	15.16%	47.12%	63,195	6.4%	90.8	2010-11	4.42	-1.31	0.72	-13.14	-3.24	9.30	-3.25
2011	619,020	50.9%	15.27%	41.32%	61,179	7.0%	85.1	Average	0.83	1.94	1.80	-3.68	-2.87	5.06	3.08
								Cumulative	0.83	1.96	1.81	-3.62	-2.83	5.19	3.36

Source: Authors' estimation. Note: G_i expressed in \$ million; all dollar value in real terms for 2011.

Notes: The annual rate of change is the compounded year-on-year change estimated through a power function; it is not the cumulative change between the initial and final years divided by the number of years between the two dates. In the base year 2002, the average incomes by group may be higher than the upper bound because the average incomes are adjusted for inflation to reflect US\$ 2011 values, while the interval bounds for the groups are not adjusted.

Appendix Table (Continued): Detailed Results by Year and for the Decade as a Whole

	<i>P</i>	<i>F/P</i> (%)	<i>F/F</i> (%)	<i>D/Fi</i> (%)	<i>Y_i</i> (\$)	<i>AD D_i/Y_i</i> (%)	<i>G_i</i> (\$M)		<i>P</i>	<i>F/P</i> (%)	<i>F/F</i> (%)	<i>D/Fi</i> (%)	<i>Y_i</i> (\$)	<i>AD D_i/Y_i</i> (%)	<i>G_i</i> (\$M)
75k to 100k – Levels								75k to 100k - Growth rates (%)							
2002	574,504	42.8%	6.44%	69.29%	111,599	4.5%	72.1	2002-03	-0.23	-0.23	3.39	-4.64	-2.61	-26.75	-31.08
2003	573,158	42.7%	6.66%	66.15%	108,722	3.5%	51.4	2003-04	-0.82	0.83	5.60	9.58	-2.64	2.31	14.87
2004	568,502	43.0%	7.05%	72.79%	105,894	3.6%	58.0	2004-05	-0.13	4.58	5.77	-2.14	-3.88	2.69	6.88
2005	567,754	45.1%	7.47%	71.25%	101,862	3.7%	59.8	2005-06	-0.11	6.99	3.84	13.04	-3.51	4.69	24.93
2006	567,136	48.3%	7.76%	81.17%	98,344	3.8%	74.0	2006-07	0.62	4.42	3.43	-5.83	-3.49	0.41	-0.43
2007	570,681	50.5%	8.03%	76.58%	94,969	3.8%	71.1	2007-08	0.65	0.31	2.48	-2.68	-4.39	3.61	-0.01
2008	574,404	50.7%	8.23%	74.55%	90,895	4.0%	68.1	2008-09	1.01	-0.26	3.82	-4.12	-0.05	0.85	1.24
2009	580,236	50.5%	8.55%	71.54%	90,847	4.0%	68.8	2009-10	2.05	2.15	2.00	-3.66	-1.67	2.98	3.84
2010	592,228	51.6%	8.73%	68.97%	89,342	4.1%	70.3	2010-11	4.42	-1.31	1.23	-3.00	-3.34	4.97	2.98
2011	619,020	50.9%	8.83%	66.93%	86,412	4.3%	70.1	Average	0.83	1.94	3.51	-0.38	-2.84	-0.47	2.58
								Cumulative	0.83	1.96	3.57	-0.38	-2.80	-0.47	2.71
100k to 200k – Levels								100k to 200k - Growth rates (%)							
2002	574,504	42.8%	8.01%	77.07%	176,304	2.5%	85.6	2002-03	-0.23	-0.23	4.74	-1.05	-2.73	-16.26	-15.76
2003	573,158	42.7%	8.39%	76.26%	171,561	2.1%	71.2	2003-04	-0.82	0.83	9.73	6.56	-2.52	25.54	39.33
2004	568,502	43.0%	9.25%	81.43%	167,284	2.7%	102.6	2004-05	-0.13	4.58	5.44	-0.52	-3.88	0.14	5.62
2005	567,754	45.1%	9.77%	81.01%	160,922	2.7%	104.3	2005-06	-0.11	6.99	8.40	13.27	-2.81	3.84	29.57
2006	567,136	48.3%	10.63%	92.50%	156,458	2.8%	135.4	2006-07	0.62	4.42	5.11	-4.25	-3.46	-1.89	0.55
2007	570,681	50.5%	11.18%	88.66%	151,136	2.8%	131.4	2007-08	0.65	0.31	5.36	-0.64	-4.31	4.91	6.27
2008	574,404	50.7%	11.80%	88.09%	144,763	2.9%	133.9	2008-09	1.01	-0.26	4.78	-2.60	-0.41	-0.74	1.78
2009	580,236	50.5%	12.38%	85.83%	144,169	2.9%	136.0	2009-10	2.05	2.15	3.82	-3.36	-1.55	2.14	5.24
2010	592,228	51.6%	12.86%	82.99%	141,945	2.9%	140.9	2010-11	4.42	-1.31	2.01	-0.75	-2.98	2.69	4.09
2011	619,020	50.9%	13.12%	82.38%	137,773	3.0%	142.1	Average	0.83	1.94	5.49	0.74	-2.74	2.26	8.52
								Cumulative	0.83	1.96	5.64	0.74	-2.70	2.29	8.76
200k to 500k – Levels								200k to 500k - Growth rates (%)							
2002	574,504	42.8%	2.77%	81.22%	375,344	2.6%	69.3	2002-03	-0.23	-0.23	3.38	3.64	-3.77	-1.13	1.65
2003	573,158	42.7%	2.86%	84.23%	361,456	2.5%	68.6	2003-04	-0.82	0.83	18.24	4.43	-1.45	8.11	29.33
2004	568,502	43.0%	3.43%	88.04%	356,235	2.8%	89.4	2004-05	-0.13	4.58	2.46	0.45	-4.65	-12.64	-9.93
2005	567,754	45.1%	3.52%	88.44%	340,065	2.4%	77.9	2005-06	-0.11	6.99	20.26	14.52	-3.01	1.81	40.45
2006	567,136	48.3%	4.31%	102.25%	329,971	2.5%	112.6	2006-07	0.62	4.42	11.90	-2.50	-3.36	-7.21	3.87
2007	570,681	50.5%	4.85%	99.73%	319,060	2.3%	113.0	2007-08	0.65	0.31	-0.56	6.95	-5.24	-1.70	0.41
2008	574,404	50.7%	4.83%	106.91%	302,779	2.3%	108.6	2008-09	1.01	-0.26	-2.45	-0.15	-0.84	1.66	-1.03
2009	580,236	50.5%	4.71%	106.75%	300,235	2.3%	107.3	2009-10	2.05	2.15	7.27	-6.15	-1.35	-0.73	3.24
2010	592,228	51.6%	5.07%	100.38%	296,223	2.3%	109.0	2010-11	4.42	-1.31	6.18	-3.03	-2.84	-0.18	3.24
2011	619,020	50.9%	5.39%	97.38%	287,923	2.3%	109.0	Average	0.83	1.94	7.41	2.02	-2.95	-1.33	7.92
								Cumulative	0.83	1.96	7.69	2.04	-2.90	-1.33	8.29

Source: Authors' estimation. Note: G_i expressed in \$ million; all dollar value in real terms for 2011.

Notes: The annual rate of change is the compounded year-on-year change estimated through a power function; it is not the cumulative change between the initial and final years divided by the number of years between the two dates. In the base year 2002, the average incomes by group may be higher than the upper bound because the average incomes are adjusted for inflation to reflect US\$ 2011 values, while the interval bounds for the groups are not adjusted.