Appendix to "The Economy of People's Republic of China from 1953"

Anton Cheremukhin, Mikhail Golosov, Sergei Guriev, Aleh Tsyvinski

February 6, 2017

Contents

1 Data

We collect and utilize data on six broad aspects of the Chinese economy: national accounts, labor inputs, capital inputs, foreign trade, prices and wages. In what follows, we describe the sources of data for each aspect and report the values that we draw from them. Then we describe the operations that we perform to combine these data to produce our final dataset. Although the main focus of the paper is on the pre-1978 period, the dataset described here covers the period from 1952 to 2012. This is important both for internal consistency of series that are normalized and compared using prices post-dating 1978, and for our numerical exercises, which use the post-1978 path in some simulations.

1.1 National Accounts

Our two main sources of data on the system of national accounts of China are published by the Chinese National Bureau of Statistics (NBS). The first one is the "China Statistical Yearbook" (CSY) which is available for different years from the official website (http://www.stats.gov.cn/ english/Statisticaldata/ AnnualData/) for the years 1996-2014. The second main source is the "60 Years of New China" (60Y) which aggregates data from previous publications for the years 1949-2009. (http://tongji.cnki.net/ overseas/engnavi/ YearBook.aspx? id=N2010030107). The second source is closely related with a book on pre-1996 statistics compiled by Hsueh and Li (1999), "China's national income 1952-1995" (HL).

Table 1 reports the Gross Domestic Product (GDP) measured as value added, for the whole economy and by sector, in current and constant prices, measured in 100 million yuan. Table 3 reports the Gross Domestic Product by Expenditure Approach, in current prices, measured in 100 million yuan. GDP is broken down into consumption, reported separately for households and for the government, gross capital formation (GCF), in turn broken down into gross fixed capital fromation (GFCF) and inventories, and net exports. The table also reports data on foreign trade: total value of imports, exports and the trade balance.

The source of data for Tables 1 and 3 are "60 Years of New China", which only covers 1952-2008 for the series of interest.

Table 5 reports the Gross Domestic Product (GDP) measured as value added, for the whole economy and by sector, in current and constant prices, measured in 100 million yuan. Table 6

Table 1: Value Added by Sector, 60Y, part 1

	Gross Domestic Product				Indices of Gross Domestic Product			
year	Total	Primary	Secondary	Tertiary	Total	Primary	Secondary	Tertiary
1952	679.0	346.0	141.8	191.2	100.0	100.0	100.0	100.0
1953	824.2	381.4	192.5	250.3	115.6	101.9	135.8	124.9
1954	859.4	395.5	211.7	252.2	120.5	103.6	157.1	124.4
1955	910.8	424.8	222.2	263.8	128.7	111.8	169.0	130.4
1956	1029.0	447.9	280.7	300.4	148.1	117.0	227.3	147.7
1957	1069.3	433.9	317.0	318.4	155.6	120.6	245.5	154.6
1958	1308.2	449.9	483.5	374.8	188.6	121.1	375.4	182.6
1959	1440.4	387.2	615.5	437.6	205.3	101.9	472.3	211.0
1960	1457.5	343.8	648.2	465.5	204.6	85.2	498.6	221.5
1961	1220.9	445.1	388.9	387.0	148.7	86.5	288.8	164.3
1962	1151.2	457.2	359.3	334.8	140.4	90.4	257.8	149.0
1963	1236.4	502.0	407.6	326.8	154.7	100.6	295.2	155.5
1964	1455.5	564.0	513.5	378.0	182.9	113.6	370.8	179.6
1965	1717.2	656.9	602.2	458.1	214.1	124.6	460.6	208.1
1966	1873.1	708.5	709.5	455.1	237.1	133.6	564.0	204.1
1967	1780.3	720.6	602.8	456.9	223.6	136.1	483.3	205.2
1968	1730.2	732.8	537.3	460.0	214.4	134.0	438.7	206.5
1969	1945.8	742.8	689.1	513.9	250.6	135.1	584.0	234.3
1970	2261.3	800.4	912.2	548.7	299.3	145.5	787.3	250.9
1971	2435.3	833.7	1022.8	578.7	320.4	148.2	884.2	265.5
1972	2530.2	834.8	1084.2	611.2	332.4	146.9	943.6	279.1
1973	2733.4	915.6	1173.0	644.7	358.5	160.1	1022.1	294.3
1974	2803.7	953.7	1192.0	658.1	366.8	166.7	1036.4	298.8
1975	3013.1	979.8	1370.5	662.8	398.7	170.1	1200.2	313.5
1976	2961.5	975.7	1337.2	648.6	392.2	167.1	1170.3	314.7
1977	3221.1	950.6	1509.1	761.4	422.1	163.4	1325.8	345.0
1978	3645.2	1027.5	1745.2	872.5	471.4	170.1	1525.2	392.7

Table 2: Value Added by Sector, 60Y, part 2

	Gross Domestic Product				Indices of Gross Domestic Product			
year	Total	Primary	Secondary	Tertiary	Total	Primary	Secondary	Tertiary
1978	3645.2	1027.5	1745.2	872.5	471.4	170.1	1525.2	392.7
1979	4062.6	1270.2	1913.5	878.9	507.1	180.6	1650.2	423.5
1980	4545.6	1371.6	2192.0	982.0	546.8	177.9	1874.1	448.9
1981	4891.6	1559.5	2255.5	1076.6	575.5	190.3	1909.1	495.7
1982	5323.4	1777.4	2383.0	1163.0	627.6	212.3	2015.3	560.0
1983	5962.7	1978.4	2646.2	1338.1	695.8	229.9	2224.2	645.0
1984	7208.1	2316.1	3105.7	1786.3	801.3	259.6	2546.2	769.8
1985	9016.0	2564.4	3866.6	2585.0	909.2	264.3	3019.0	909.6
1986	10275.2	2788.7	4492.7	2993.8	989.7	273.1	3327.6	1019.1
1987	12058.6	3233.0	5251.6	3574.0	1104.3	286.0	3783.3	1165.5
1988	15042.8	3865.4	6587.2	4590.3	1228.9	293.2	4332.6	1318.8
1989	16992.3	4265.9	7278.0	5448.4	1278.8	302.3	4495.8	1389.5
1990	18667.8	5062.0	7717.4	5888.4	1327.9	324.4	4638.3	1422.0
1991	21781.5	5342.2	9102.2	7337.1	1449.8	332.2	5280.9	1548.1
1992	26923.5	5866.6	11699.5	9357.4	1656.3	347.8	6398.0	1740.8
1993	35333.9	6963.8	16454.4	11915.7	1887.6	364.2	7669.1	1952.9
1994	48197.9	9572.7	22445.4	16179.8	2134.5	378.7	9077.1	2169.5
1995	60793.7	12135.8	28679.5	19978.5	2367.7	397.7	10336.6	2383.0
1996	71176.6	14015.4	33835.0	23326.2	2604.6	417.9	11587.9	2607.6
1997	78973.0	14441.9	37543.0	26988.1	2846.8	432.6	12802.2	2887.0
1998	84402.3	14817.6	39004.2	30580.5	3069.8	447.7	13943.0	3128.8
1999	89677.1	14770.0	41033.6	33873.4	3303.7	460.2	15077.3	3420.7
2000	99214.6	14944.7	45555.9	38714.0	3582.2	471.3	16499.0	3754.1
2001	109655.2	15781.3	49512.3	44361.6	3879.6	484.5	17891.8	4139.2
2002	120332.7	16537.0	53896.8	49898.9	4231.9	498.5	19650.4	4571.4
2003	135822.8	17381.7	62436.3	56004.7	4656.2	511.0	22140.5	5005.9
2004	159878.3	21412.7	73904.3	64561.3	5125.8	543.2	24600.8	5509.3
2005	183217.4	22420.0	87364.6	73432.9	5660.5	571.6	27478.0	6087.8
2006	211923.5	24040.0	103162.0	84721.4	6319.8	600.2	31040.8	6824.8
2007	257305.6	28627.0	124799.0	103879.6	7143.8	622.7	35591.8	7763.3
2008	300670.0	34000.0	146183.4	120486.6	7783.2	656.9	38884.1	8499.9

Table 3: GDP by Expenditure Approach, 60Y, part 1

	Gross Domestic Product by Expenditure Approach							Total Value of Exports and Imports		
year	Consumption	Households	Government	GCF	GFCF	Inventories	Net Exports	Exports	Imports	Balance
1952	546.3	453	93.3	153.7	80.7	73	-7.8	27.1	37.5	-10.4
1953	644.4	529.2	115.2	198.3	115.3	83	-8.4	34.8	46.1	-11.3
1954	654.1	550	104.1	226.9	140.9	86	-2.7	40	44.7	-4.7
1955	722.3	602.6	119.7	221.5	145.5	76	-8.9	48.7	61.1	-12.4
1956	772.6	646.8	125.8	257.6	219.6	38	4	55.7	53	2.7
1957	816.4	686.6	129.8	280	187	93	5.5	54.5	50	4.5
1958	852.6	724	128.6	432	333	99	6.6	67	61.7	5.3
1959	821.5	691.2	130.3	621.7	435.7	186	8.1	78.1	71.2	6.9
1960	932.6	741.7	190.9	575	473	102	0.4	63.3	65.1	-1.8
1961	995.1	816.7	178.4	274.6	227.6	47	5.5	47.7	43	4.7
1962	985.7	838.7	147	178.1	175.1	3	12.6	47.1	33.8	13.3
1963	1014.3	844.2	170.1	265.3	215.3	50	13.5	50	35.7	14.3
1964	1078.6	889.6	189	350.3	290.3	60	12.9	55.4	42.1	13.3
1965	1158.6	951.5	207.1	462.1	350.1	112	8.5	63.1	55.3	7.8
1966	1251.3	1021.1	230.2	569.8	406.8	163	6.2	66	61.1	4.9
1967	1275.7	1081.5	194.2	425.7	323.7	102	6.3	58.8	53.4	5.4
1968	1269.1	1076.6	192.5	432.2	300.2	132	7.4	57.6	50.9	6.7
1969	1359.4	1127.7	231.7	485.9	406.9	79	12.4	59.8	47.2	12.6
1970	1459.7	1206.8	252.9	744.9	545.9	199	2.4	56.8	56.1	0.7
1971	1557.9	1262	295.9	819	603	216	15.6	68.5	52.4	16.1
1972	1644.3	1334.2	310.1	791.1	622.1	169	18.4	82.9	64	18.9
1973	1751.3	1432.5	318.8	903.5	664.5	239	14.8	116.9	103.6	13.3
1974	1809.6	1467	342.6	936.1	748.1	188	-7	139.4	152.8	-13.4
1975	1887.4	1528.5	358.9	1062.3	880.3	182	0.7	143	147.4	-4.4
1976	1969.5	1588.5	381	990.1	865.1	125	8.7	134.8	129.3	5.5
1977	2057.8	1647.8	410	1098.1	911.1	187	10.1	139.7	132.8	6.9
1978	2239.1	1759.1	480	1377.9	1073.9	304	-11.4	167.6	187.4	-19.8

Table 4: GDP by Expenditure Approach, 60Y, part 2

	Gross Domestic Product by Expenditure Approach							Total Value of Exports and Imports		
year	Consumption	Households	Government	GCF	GFCF	Inventories	Net Exports	Exports	Imports	Balance
1978	2239.1	1759.1	480	1377.9	1073.9	304	-11.4	167.6	187.4	-19.8
1979	2633.7	2011.5	622.2	1478.9	1153.1	325.8	-20	211.7	242.9	-31.2
1980	3007.9	2331.2	676.7	1599.7	1322.4	277.3	-14.7	271.2	298.8	-27.6
1981	3361.5	2627.9	733.6	1630.2	1339.3	290.9	17.1	367.6	367.7	-0.1
1982	3714.8	2902.9	811.9	1784.2	1503.2	281	91	413.8	357.5	56.3
1983	4126.4	3231.1	895.3	2039	1723.3	315.7	50.8	438.3	421.8	16.5
1984	4846.3	3742	1104.3	2515.1	2147	368.1	1.3	580.5	620.5	-40
1985	5986.3	4687.4	1298.9	3457.5	2672	785.5	-367.1	808.9	1257.8	-448.9
1986	6821.8	5302.1	1519.7	3941.9	3139.7	802.2	-255.2	1082.1	1498.3	-416.2
1987	7804.6	6126.1	1678.5	4462	3798.7	663.3	10.8	1470.0	1614.2	-144.2
1988	9839.5	7868.1	1971.4	5700.2	4701.9	998.3	-151.1	1766.7	2055.1	-288.4
1989	11164.2	8812.6	2351.6	6332.7	4419.4	1913.3	-185.6	1956.0	2199.9	-243.9
1990	12090.5	9450.9	2639.6	6747	4827.8	1919.2	510.3	2985.8	2574.3	411.5
1991	14091.9	10730.6	3361.3	7868	6070.3	1797.7	617.5	3827.1	3398.7	428.4
1992	17203.3	13000.1	4203.2	10086.3	8513.7	1572.6	275.6	4676.3	4443.3	233.0
1993	21899.9	16412.1	5487.8	15717.7	13309.2	2408.5	-679.5	5284.8	5986.2	-701.4
1994	29242.2	21844.2	7398	20341.1	17312.7	3028.4	634.1	10421.8	9960.1	461.7
1995	36748.2	28369.7	8378.5	25470.1	20885	4585.1	998.6	12451.8	11048.1	1403.7
1996	43919.5	33955.9	9963.6	28784.9	24048.1	4736.8	1459.2	12576.4	11557.4	1019.0
1997	48140.6	36921.5	11219.1	29968	25965	4003	3549.9	15160.7	11806.5	3354.2
1998	51588.2	39229.3	12358.9	31314.2	28569	2745.2	3629.2	15223.6	11626.1	3597.5
1999	55636.9	41920.4	13716.5	32951.5	30527.3	2424.2	2536.6	16159.8	13736.5	2423.3
2000	61516	45854.6	15661.4	34842.8	33844.4	998.4	2390.2	20634.4	18638.8	1995.6
2001	66878.3	49213.2	17665.1	39769.4	37754.5	2014.9	2324.7	22024.4	20159.2	1865.2
2002	71691.2	52571.3	19119.9	45565	43632.1	1932.9	3094.1	26947.9	24430.3	2517.6
2003	77449.5	56834.4	20615.1	55963	53490.7	2472.3	2986.3	36287.9	34195.6	2092.3
2004	87032.9	63833.5	23199.4	69168.4	65117.7	4050.7	4079.1	49103.3	46435.8	2667.5
2005	97822.7	71217.5	26605.2	80646.3	77304.8	3341.5	10223.1	62648.1	54273.7	8374.4
2006	110595.3	80476.9	30118.4	94402	90150.9	4251.1	16654	77594.6	63376.9	14217.7
2007	128793.8	93602.9	35190.9	110919.4	105435.9	5483.6	23380.6	93455.6	73284.6	20171.1
2008	149112.6	108392.2	40720.4	133612.3	126209.5	7402.9	24134.9	100394.9	79526.5	20868.4

reports the Gross Domestic Product by Expenditure Approach, in current prices, measured in 100 million yuan. GDP is broken down into consumption, reported separately for households and for the government, gross capital formation (GCF), in turn broken down into gross fixed capital fromation (GFCF) and inventories, and net exports. The table also reports data on foreign trade: total value of imports, exports and the trade balance.

The source of data for Tables 5 and 6 are "China Statistical Yearbooks" from 1996 to 2014, which only cover 1978-2012 for the series of interest.

In order to get consistent series for the whole period of interest, 1952-2012, we merge the data from the two sources. The two sources largely agree for the overlapping periods. However, there are some discrepancies between the two sources, with the earliest appearing for year 1990. For the conflicting cases we always prefer the most recent data vintage - CSY 2014.

Table 7 reports merged series for GDP by sector, in current and constant prices, for 1952-2012. Table 9 reports merged series for the breakdown of GDP by expenditure approach, also for 1952-2012.

1.2 Prices and Wages

To obtain a consistent series for GDP and its sectoral split into agriculture and non-agriclture, we need to obtain sectoral GDP deflators. We compute aggregate and sectoral GDP deflators using Table 7 by dividing value added in current prices by the indices in constant prices, and multiply each series by a constant that converts nominal values into constant 1978 yuan. We report the results in Table 11. Taking the ratio of price deflators in the two sectors allows us to estimate the relative prices of agricultural goods to non-agricultural goods.

We also report indexes of agricultural and industrial goods prices advocated by Young (2003). These are the General Purchasing Price Index for Farm Products and the Ex-Factory Price Index for Industrial Products, available from the CSY for various years. For pre-1978 values we also use Chow (1987) who cites CSY 1981.

In Table 13 we report average wages for staff and workers in the agricultural and non-agricultural sectors for 1952-2011. These data come from two sources. The pre-1978 data come from Chow (1987), who cites CSY for year 1981. The post-1978 data come from CSY for years 1996-2013 from the official website. Two other columns report the factor share of income earned by labor in agriculture and non-agriculture, computed from Bai and Qian (2010), "The Factor

Table 5: Value Added by Sector, CSY

	Gross Domestic Product				Indices of Gross Domestic Product			
year	Total	Primary	Secondary	Tertiary	Total	Primary	Secondary	Tertiary
1978	3645.2	1027.5	1745.2	872.5	100.0	100.0	100.0	100.0
1979	4062.6	1270.2	1913.5	878.9	107.6	106.1	108.2	107.9
1980	4545.6	1371.6	2192.0	982.0	116.0	104.6	122.9	114.3
1981	4891.6	1559.5	2255.5	1076.6	122.1	111.9	125.2	126.2
1982	5323.4	1777.4	2383.0	1163.0	133.1	124.8	132.1	142.6
1983	5962.7	1978.4	2646.2	1338.1	147.6	135.1	145.8	164.3
1984	7208.1	2316.1	3105.7	1786.3	170.0	152.6	166.9	196.0
1985	9016.0	2564.4	3866.6	2585.0	192.9	155.4	197.9	231.7
1986	10275.2	2788.7	4492.7	2993.8	210.0	160.5	218.2	259.6
1987	12058.6	3233.0	5251.6	3574.0	234.3	168.1	248.1	296.8
1988	15042.8	3865.4	6587.2	4590.3	260.7	172.3	284.1	335.9
1989	16992.3	4265.9	7278.0	5448.4	271.3	177.6	294.8	353.9
1990	18667.8	5062.0	7717.4	5888.4	281.7	190.7	304.1	362.1
1991	21781.5	5342.2	9102.2	7337.1	307.6	195.2	346.3	394.3
1992	26923.5	5866.6	11699.5	9357.4	351.4	204.4	419.5	443.3
1993	35333.9	6963.8	16454.4	11915.7	400.4	214.0	502.8	497.4
1994	48197.9	9572.7	22445.4	16179.8	452.8	222.6	595.2	552.5
1995	60793.7	12135.8	28679.5	19978.5	502.3	233.7	677.7	606.9
1996	71176.6	14015.4	33835.0	23326.2	552.6	245.6	759.8	664.1
1997	78973.0	14441.9	37543.0	26988.1	603.9	254.2	839.4	735.3
1998	84402.3	14817.6	39004.2	30580.5	651.2	263.1	914.2	796.8
1999	89677.1	14770.0	41033.6	33873.4	700.9	270.5	988.6	871.2
2000	99214.6	14944.7	45555.9	38714.0	759.9	277.0	1081.8	956.1
2001	109655.2	15781.3	49512.3	44361.6	823.0	284.8	1173.1	1054.2
2002	120332.7	16537.0	53896.8	49898.9	897.8	293.0	1288.4	1164.2
2003	135822.8	17381.7	62436.3	56004.7	987.8	300.3	1451.7	1274.9
2004	159878.3	21412.7	73904.3	64561.3	1087.4	319.3	1613.0	1403.1
2005	184937.4	22420.0	87598.1	74919.3	1210.4	336.0	1807.9	1574.7
2006	216314.4	24040.0	103719.5	88554.9	1363.8	352.8	2050.0	1797.3
2007	265810.3	28627.0	125831.4	111351.9	1557.0	366.0	2358.8	2084.6
2008	314045.4	33702.0	149003.4	131340.0	1707.0	385.6	2591.8	2301.4
2009	340902.8	35226.0	157638.8	148038.0	1864.3	401.8	2849.4	2521.5
2010	401512.8	40533.6	187383.2	173596.0	2059.0	418.9	3198.4	2767.5
2011	473104.0	47486.2	220412.8	205205.0	2250.5	436.8	3527.4	3028.0
2012	518942.1	52373.6	235162.0	231406.5	2422.7	456.6	3806.6	3272.0

Table 6: GDP by Expenditure Approach, CSY

	Gross Domestic Product by Expenditure Approach							Total Value of Exports and Imports		
year	Consumption	Households	Government	GCF	GFCF	Inventories	Net Exports	Exports	Imports	Balance
1978	2239.1	1759.1	480.0	1377.9	1073.9	304.0	-11.4	167.6	187.4	-19.8
1979	2633.7	2011.5	622.2	1478.9	1153.1	325.8	-20.0			
1980	3007.9	2331.2	676.7	1599.7	1322.4	277.3	-14.7	271.2	298.8	-27.6
1981	3361.5	2627.9	733.6	1630.2	1339.3	290.9	17.1			
1982	3714.8	2902.9	811.9	1784.2	1503.2	281.0	91.0			
1983	4126.4	3231.1	895.3	2039.0	1723.3	315.7	50.8			
1984	4846.3	3742.0	1104.3	2515.1	2147.0	368.1	1.3			
1985	5986.3	4687.4	1298.9	3457.5	2672.0	785.5	-367.1	808.9	1257.8	-448.9
1986	6821.8	5302.1	1519.7	3941.9	3139.7	802.2	-255.2			
1987	7804.6	6126.1	1678.5	4462.0	3798.7	663.3	10.8			
1988	9839.5	7868.1	1971.4	5700.2	4701.9	998.3	-151.1			
1989	11164.2	8812.6	2351.6	6332.7	4419.4	1913.3	-185.6			
1990	12090.5	9450.9	2639.6	6747.0	4827.8	1919.2	510.3	2985.8	2574.3	411.5
1991	14091.9	10730.6	3361.3	7868.0	6070.3	1797.7	617.5	3827.1	3398.7	428.4
1992	17203.3	13000.1	4203.2	10086.3	8513.7	1572.6	275.6	4676.3	4443.3	233.0
1993	21899.9	16412.1	5487.8	15717.7	13309.2	2408.5	-679.5	5284.8	5986.2	-701.4
1994	29242.2	21844.2	7398.0	20341.1	17312.7	3028.4	634.1	10421.8	9960.1	461.7
1995	36748.2	28369.7	8378.5	25470.1	20885.0	4585.1	998.6	12451.8	11048.1	1403.7
1996	43919.5	33955.9	9963.6	28784.9	24048.1	4736.8	1459.2	12576.4	11557.4	1019.0
1997	48140.6	36921.5	11219.1	29968.0	25965.0	4003.0	3549.9	15160.7	11806.5	3354.2
1998	51588.2	39229.3	12358.9	31314.2	28569.0	2745.2	3629.2	15223.6	11626.1	3597.5
1999	55636.9	41920.4	13716.5	32951.5	30527.3	2424.2	2536.6	16159.8	13736.4	2423.4
2000	61516.0	45854.6	15661.4	34842.8	33844.4	998.4	2390.2	20634.4	18638.8	1995.6
2001	66933.9	49435.9	17498.0	39769.4	37754.5	2014.9	2324.7	22024.4	20159.2	1865.2
2002	71816.5	53056.6	18759.9	45565.0	43632.1	1932.9	3094.1	26947.9	24430.3	2517.6
2003	77685.5	57649.8	20035.7	55963.0	53490.7	2472.3	2964.9	36287.9	34195.6	2092.3
2004	87552.6	65218.5	22334.1	69168.4	65117.7	4050.7	4235.6	49103.3	46435.8	2667.5
2005	99357.5	72958.7	26398.8	77856.8	74232.9	3624.0	10209.1	62648.1	54273.7	8374.4
2006	113103.8	82575.5	30528.4	92954.1	87954.1	5000.0	16654.6	77597.2	63376.9	14220.3
2007	132232.9	96332.5	35900.4	110943.2	103948.6	6994.6	23423.1	93563.6	73300.1	20263.5
2008	153422.5	111670.4	41752.1	138325.3	128084.4	10240.9	24226.8	100394.9	79526.5	20868.4
2009	169274.8	123584.6	45690.2	164463.2	156679.8	7783.4	15037.0	82029.7	68618.4	13411.3
2010	194115.0	140758.6	53356.3	193603.9	183615.2	9988.7	15097.6	107022.8	94699.3	12323.5
2011	232111.5	168956.6	63154.9	228344.3	216203.3	121401.0	12163.3	123240.6	113161.4	10079.2
2012	261832.8	190423.8	71409.0	252773.2	239333.4	13439.8	14632.4	129359.3	114801.0	14558.3

Table 7: Value Added by Sector, Merge of CSY and 60Y

	Gross Domestic Product				Indices of Gross Domestic Product			
year	Total	Primary	Secondary	Tertiary	Total	Primary	Secondary	Tertiary
1952	679	346	142	191	100	100.0	100.0	100.0
1953	824.2	381	193	250	116	101.9	135.8	124.9
1954	859.4	396	212	252	120	103.6	157.1	124.4
1955	910.8	425	222	264	129	111.8	169.0	130.4
1956	1029.0	448	281	300	148	117.0	227.3	147.7
1957	1069.3	434	317	318	156	120.6	245.5	154.6
1958	1308.2	450	484	375	189	121.1	375.4	182.6
1959	1440.4	387	616	438	205	101.9	472.3	211.0
1960	1457.5	344	648	466	205	85.2	498.6	221.5
1961	1220.9	445	389	387	149	86.5	288.8	164.3
1962	1151.2	457	359	335	140	90.4	257.8	149.0
1963	1236.4	502	408	327	155	100.6	295.2	155.5
1964	1455.5	564	514	378	183	113.6	370.8	179.6
1965	1717.2	657	602	458	214	124.6	460.6	208.1
1966	1873.1	708	710	455	237	133.6	564.0	204.1
1967	1780.3	721	603	457	224	136.1	483.3	205.2
1968	1730.2	733	537	460	214	134.0	438.7	206.5
1969	1945.8	743	689	514	251	135.1	584.0	234.3
1970	2261.3	800	912	549	299	145.5	787.3	250.9
1971	2435.3	834	1023	579	320	148.2	884.2	265.5
1972	2530.2	835	1084	611	332	146.9	943.6	279.1
1973	2733.4	916	1173	645	359	160.1	1022.1	294.3
1974	2803.7	954	1192	658	367	166.7	1036.4	298.8
1975	3013.1	980	1371	663	399	170.1	1200.2	313.5
1976	2961.5	976	1337	649	392	167.1	1170.3	314.7
1977	3221.1	951	1509	761	422	163.4	1325.8	345.0
1978	3645.2	1028	1745	872	471	170.1	1525.2	392.7

Table 8: Value Added by Sector, Merge of CSY and 60Y

	Gross Domestic Product				Indices of Gross Domestic Product			
year	Total	Primary	Secondary	Tertiary	Total	Primary	Secondary	Tertiary
1978	3645.2	1028	1745	872	471	170.1	1525.2	392.7
1979	4062.6	1270	1914	879	507	180.6	1650.2	423.5
1980	4545.6	1372	2192	982	547	177.9	1874.1	448.9
1981	4891.6	1559	2256	1077	576	190.3	1909.1	495.7
1982	5323.4	1777	2383	1163	628	212.3	2015.3	560.0
1983	5962.7	1978	2646	1338	696	229.9	2224.2	645.0
1984	7208.1	2316	3106	1786	801	259.6	2546.2	769.8
1985	9016.0	2564	3867	2585	909	264.3	3019.0	909.6
1986	10275.2	2789	4493	2994	990	273.1	3327.6	1019.1
1987	12058.6	3233	5252	3574	1104	286.0	3783.3	1165.5
1988	15042.8	3865	6587	4590	1229	293.2	4332.6	1318.8
1989	16992.3	4266	7278	5448	1279	302.3	4495.8	1389.5
1990	18667.8	5062	7717	5888	1328	324.4	4638.3	1422.0
1991	21781.5	5342	9102	7337	1450	332.2	5280.9	1548.1
1992	26923.5	5867	11700	9357	1656	347.8	6398.0	1740.8
1993	35333.9	6964	16454	11916	1888	364.2	7669.1	1952.9
1994	48197.9	9573	22445	16180	2134	378.7	9077.1	2169.5
1995	60793.7	12136	28679	19978	2368	397.7	10336.6	2383.0
1996	71176.6	14015	33835	23326	2605	417.9	11587.9	2607.6
1997	78973.0	14442	37543	26988	2847	432.6	12802.2	2887.0
1998	84402.3	14818	39004	30580	3070	447.7	13943.0	3128.8
1999	89677.1	14770	41034	33873	3304	460.2	15077.3	3420.7
2000	99214.6	14945	45556	38714	3582	471.3	16499.0	3754.1
2001	109655.2	15781	49512	44362	3880	484.5	17891.8	4139.2
2002	120332.7	16537	53897	49899	4232	498.5	19650.4	4571.4
2003	135822.8	17382	62436	56005	4656	511.0	22140.5	5005.9
2004	159878.3	21413	73904	64561	5126	543.2	24600.8	5509.3
2005	184937.4	22420	87598	74919	5705	571.6	27573.2	6183.1
2006	216314.4	24040	103720	88555	6429	600.2	31265.5	7057.2
2007	265810.3	28627	125831	111352	7339	622.7	35975.2	8185.3
2008	314045.4	33702	149003	131340	8046	656.1	39528.6	9036.8
2009	340902.8	35226	157639	148038	8788	683.6	43457.9	9901.0
2010	401512.8	40534	187383	173596	9706	712.8	48781.6	10866.6
2011	473104.0	47486	220413	205205	10608	743.1	53798.6	11889.8
2012	518942.1	52374	235162	231406	11420	776.9	58057.5	12847.6

Table 9: Value Added and by Expenditure Approach, Merge of CSY and 60Y

	Gross Domestic Product by Expenditure Approach							Total Value of Exports and Imports		
year	Consumption	Households	Government	GCF	GFCF	Inventories	Net Exports	Exports	Imports	Balance
1952	546.3	453.0	93.3	153.7	80.7	73.0	-7.8	27.1	37.5	-10.4
1953	644.4	529.2	115.2	198.3	115.3	83.0	-8.4	34.8	46.1	-11.3
1954	654.1	550.0	104.1	226.9	140.9	86.0	-2.7	40	44.7	-4.7
1955	722.3	602.6	119.7	221.5	145.5	76.0	-8.9	48.7	61.1	-12.4
1956	772.6	646.8	125.8	257.6	219.6	38.0	4.0	55.7	53	2.7
1957	816.4	686.6	129.8	280.0	187.0	93.0	5.5	54.5	50	4.5
1958	852.6	724.0	128.6	432.0	333.0	99.0	6.6	67	61.7	5.3
1959	821.5	691.2	130.3	621.7	435.7	186.0	8.1	78.1	71.2	6.9
1960	932.6	741.7	190.9	575.0	473.0	102.0	0.4	63.3	65.1	-1.8
1961	995.1	816.7	178.4	274.6	227.6	47.0	5.5	47.7	43	4.7
1962	985.7	838.7	147.0	178.1	175.1	3.0	12.6	47.1	33.8	13.3
1963	1014.3	844.2	170.1	265.3	215.3	50.0	13.5	50	35.7	14.3
1964	1078.6	889.6	189.0	350.3	290.3	60.0	12.9	55.4	42.1	13.3
1965	1158.6	951.5	207.1	462.1	350.1	112.0	8.5	63.1	55.3	7.8
1966	1251.3	1021.1	230.2	569.8	406.8	163.0	6.2	66	61.1	4.9
1967	1275.7	1081.5	194.2	425.7	323.7	102.0	6.3	58.8	53.4	5.4
1968	1269.1	1076.6	192.5	432.2	300.2	132.0	7.4	57.6	50.9	6.7
1969	1359.4	1127.7	231.7	485.9	406.9	79.0	12.4	59.8	47.2	12.6
1970	1459.7	1206.8	252.9	744.9	545.9	199.0	2.4	56.8	56.1	0.7
1971	1557.9	1262.0	295.9	819.0	603.0	216.0	15.6	68.5	52.4	16.1
1972	1644.3	1334.2	310.1	791.1	622.1	169.0	18.4	82.9	64	18.9
1973	1751.3	1432.5	318.8	903.5	664.5	239.0	14.8	116.9	103.6	13.3
1974	1809.6	1467.0	342.6	936.1	748.1	188.0	-7.0	139.4	152.8	-13.4
1975	1887.4	1528.5	358.9	1062.3	880.3	182.0	0.7	143	147.4	-4.4
1976	1969.5	1588.5	381.0	990.1	865.1	125.0	8.7	134.8	129.3	5.5
1977	2057.8	1647.8	410.0	1098.1	911.1	187.0	10.1	139.7	132.8	6.9
1978	2239.1	1759.1	480.0	1377.9	1073.9	304.0	-11.4	167.6	187.4	-19.8

Table 10: Value Added and by Expenditure Approach, Merge of CSY and 60Y

	Gross Domestic Product by Expenditure Approach							Total Value of Exports and Imports		
year	Consumption	Households	Government	GCF	GFCF	Inventories	Net Exports	Exports	Imports	Balance
1978	2239.1	1759.1	480.0	1377.9	1073.9	304.0	-11.4	167.6	187.4	-19.8
1979	2633.7	2011.5	622.2	1478.9	1153.1	325.8	-20.0	211.7	242.9	-31.2
1980	3007.9	2331.2	676.7	1599.7	1322.4	277.3	-14.7	271.2	298.8	-27.6
1981	3361.5	2627.9	733.6	1630.2	1339.3	290.9	17.1	367.6	367.7	-0.1
1982	3714.8	2902.9	811.9	1784.2	1503.2	281.0	91.0	413.8	357.5	56.3
1983	4126.4	3231.1	895.3	2039.0	1723.3	315.7	50.8	438.3	421.8	16.5
1984	4846.3	3742.0	1104.3	2515.1	2147.0	368.1	1.3	580.5	620.5	-40
1985	5986.3	4687.4	1298.9	3457.5	2672.0	785.5	-367.1	808.9	1257.8	-448.9
1986	6821.8	5302.1	1519.7	3941.9	3139.7	802.2	-255.2	1082.1	1498.3	-416.2
1987	7804.6	6126.1	1678.5	4462.0	3798.7	663.3	10.8	1470	1614.2	-144.2
1988	9839.5	7868.1	1971.4	5700.2	4701.9	998.3	-151.1	1766.7	2055.1	-288.4
1989	11164.2	8812.6	2351.6	6332.7	4419.4	1913.3	-185.6	1956	2199.9	-243.9
1990	12090.5	9450.9	2639.6	6747.0	4827.8	1919.2	510.3	2985.8	2574.3	411.5
1991	14091.9	10730.6	3361.3	7868.0	6070.3	1797.7	617.5	3827.1	3398.7	428.4
1992	17203.3	13000.1	4203.2	10086.3	8513.7	1572.6	275.6	4676.3	4443.3	233
1993	21899.9	16412.1	5487.8	15717.7	13309.2	2408.5	-679.5	5284.8	5986.2	-701.4
1994	29242.2	21844.2	7398.0	20341.1	17312.7	3028.4	634.1	10421.8	9960.1	461.7
1995	36748.2	28369.7	8378.5	25470.1	20885.0	4585.1	998.6	12451.8	11048.1	1403.7
1996	43919.5	33955.9	9963.6	28784.9	24048.1	4736.8	1459.2	12576.4	11557.4	1019
1997	48140.6	36921.5	11219.1	29968.0	25965.0	4003.0	3549.9	15160.7	11806.5	3354.2
1998	51588.2	39229.3	12358.9	31314.2	28569.0	2745.2	3629.2	15223.6	11626.1	3597.5
1999	55636.9	41920.4	13716.5	32951.5	30527.3	2424.2	2536.6	16159.8	13736.4	2423.4
2000	61516.0	45854.6	15661.4	34842.8	33844.4	998.4	2390.2	20634.4	18638.8	1995.6
2001	66933.9	49435.9	17498.0	39769.4	37754.5	2014.9	2324.7	22024.4	20159.2	1865.2
2002	71816.5	53056.6	18759.9	45565.0	43632.1	1932.9	3094.1	26947.9	24430.3	2517.6
2003	77685.5	57649.8	20035.7	55963.0	53490.7	2472.3	2964.9	36287.9	34195.6	2092.3
2004	87552.6	65218.5	22334.1	69168.4	65117.7	4050.7	4235.6	49103.3	46435.8	2667.5
2005	99357.5	72958.7	26398.8	77856.8	74232.9	3624.0	10209.1	62648.1	54273.7	8374.4
2006	113103.8	82575.5	30528.4	92954.1	87954.1	5000.0	16654.6	77597.2	63376.9	14220.3
2007	132232.9	96332.5	35900.4	110943.2	103948.6	6994.6	23423.1	93563.6	73300.1	20263.5
2008	153422.5	111670.4	41752.1	138325.3	128084.4	10240.9	24226.8	100394.9	79526.5	20868.4
2009	169274.8	123584.6	45690.2	164463.2	156679.8	7783.4	15037.0	82029.7	68618.4	13411.3
2010	194115.0	140758.6	53356.3	193603.9	183615.2	9988.7	15097.6	107022.8	94699.3	12323.5
2011	232111.5	168956.6	63154.9	228344.3	216203.3	121401.0	12163.3	123240.6	113161.4	10079.2
2012	261832.8	190423.8	71409.0	252773.2	239333.4	13439.8	14632.4	129359.3	114801.0	14558.3

Table 11: Price indices, Merge of CSY and 60Y, Chow 1987

	Price Indices (1978=1)					
year	GDP deflator	Agric. deflator	Non-ag. deflator	Rel. price ag goods	Farm prices	Ex-Factory prices
1952	0.878	0.573	1.966	0.291	0.559	1.387
1953	0.922	0.620	1.588	0.390	0.609	1.342
1954	0.922	0.632	1.516	0.417	0.629	1.321
1955	0.915	0.629	1.517	0.415	0.621	1.304
1956	0.899	0.634	1.325	0.478	0.640	1.207
1957	0.889	0.596	1.339	0.445	0.672	1.210
1958	0.897	0.615	1.180	0.521	0.687	1.202
1959	0.907	0.629	1.084	0.581	0.700	1.210
1960	0.921	0.668	1.043	0.640	0.724	1.201
1961	1.062	0.852	1.236	0.690	0.926	1.261
1962	1.061	0.837	1.286	0.651	0.920	1.310
1963	1.033	0.826	1.247	0.662	0.894	1.303
1964	1.029	0.822	1.224	0.672	0.872	1.277
1965	1.037	0.873	1.174	0.743	0.864	1.217
1966	1.022	0.878	1.135	0.774	0.901	1.165
1967	1.030	0.876	1.169	0.750	0.899	1.151
1968	1.043	0.906	1.175	0.771	0.898	1.126
1969	1.004	0.911	1.072	0.850	0.897	1.088
1970	0.977	0.911	1.018	0.895	0.897	1.040
1971	0.983	0.931	1.012	0.920	0.912	1.034
1972	0.984	0.941	1.007	0.934	0.925	1.028
1973	0.986	0.947	1.007	0.940	0.933	1.023
1974	0.988	0.947	1.011	0.937	0.941	1.013
1975	0.977	0.954	0.989	0.964	0.960	1.010
1976	0.976	0.967	0.981	0.986	0.965	1.007
1977	0.987	0.963	0.997	0.966	0.962	0.998
1978	1.000	1.000	1.000	1.000	1.000	1.000

Income Distribution in China 1978-2007."

1.3 Labor Inputs

In Table 14 we report total population, total employment, employment in primary, secondary and tertiary sectors, measured in tens of thousand, from "60 Years of New China" (see previous section).

In Table 15 we report total population, total employment, employment in primary, secondary and tertiary sectors, measured in tens of thousand, from "China Statistical Yearbook".

Table 16 reports merged series for population and employment by sector, for 1952-2012. We are interested in the division of economic activity into agricultural and non-agricultural.

Table 12: Price indices, Merge of CSY and 60Y, Chow 1987

	Price Indices (1978=1)					
year	GDP deflator	Agric. deflator	Non-ag. deflator	Rel. price ag goods	Farm prices	Ex-Factory prices
1978	1.000	1.000	1.000	1.000	1.000	1.000
1979	1.036	1.165	0.986	1.181	1.221	1.016
1980	1.075	1.277	1.006	1.269	1.308	1.021
1981	1.099	1.357	1.009	1.344	1.385	1.023
1982	1.097	1.387	0.993	1.397	1.415	1.021
1983	1.108	1.425	0.998	1.427	1.478	1.020
1984	1.163	1.478	1.057	1.398	1.537	1.034
1985	1.282	1.606	1.187	1.353	1.669	1.124
1986	1.343	1.691	1.247	1.356	1.776	1.167
1987	1.412	1.872	1.295	1.445	1.989	1.259
1988	1.583	2.183	1.446	1.510	2.446	1.448
1989	1.718	2.337	1.578	1.481	2.813	1.717
1990	1.818	2.584	1.637	1.578	2.740	1.788
1991	1.943	2.663	1.786	1.491	2.685	1.899
1992	2.102	2.793	1.967	1.420	2.776	2.028
1993	2.421	3.166	2.288	1.384	3.148	2.515
1994	2.920	4.185	2.716	1.541	4.405	3.005
1995	3.320	5.053	3.059	1.652	5.281	3.453
1996	3.534	5.553	3.245	1.711	5.503	3.553
1997	3.587	5.528	3.326	1.662	5.255	3.542
1998	3.555	5.480	3.308	1.657	4.835	3.397
1999	3.510	5.314	3.290	1.615	4.245	3.315
2000	3.582	5.251	3.390	1.549	4.092	3.408
2001	3.655	5.394	3.467	1.556	4.125	3.364
2002	3.677	5.493	3.493	1.572	4.113	3.290
2003	3.772	5.632	3.598	1.565	4.294	3.366
2004	4.033	6.527	3.808	1.714	4.856	3.571
2005	4.192	6.495	3.996	1.625	4.924	3.746
2006	4.351	6.632	4.172	1.590	4.983	3.859
2007	4.684	7.613	4.476	1.701	5.905	3.978
2008	5.047	8.505	4.812	1.767	6.738	4.252
2009	5.017	8.532	4.789	1.782	6.576	4.023
2010	5.350	9.416	5.102	1.845	7.293	4.244
2011	5.767	10.581	5.488	1.928	8.496	4.500
2012	5.876	11.163	5.580	2.001	8.725	4.423

Table 13: Labor Income by Sector (CSY, Bai Qian (2010), Chow (1987))

	Hourly Wages in		Labor Share in			Hourly Wages in		Labor Share in	
year	Agriculture	Non-agriculture	Agriculture	Non-agriculture	year	Agriculture	Non-agriculture	Agriculture	Non-agriculture
1952	358.2	474.2			1978	470.0	628.9	0.895	0.417
1953	413.6	530.4			1979	528.0	680.2	0.891	0.423
1954	438.5	549.7			1980	616.0	773.9	0.894	0.427
1955	440.4	552.5			1981	637.0	782.6	0.908	0.430
1956	475.7	620.6			1982	661.0	808.4	0.901	0.434
1957	478.6	635.3			1983	691.0	836.1	0.908	0.431
1958	449.9	484.3			1984	770.0	988.5	0.911	0.442
1959	392.6	473.3			1985	878.0	1166.1	0.917	0.448
1960	348.7	495.4			1986	1048.0	1347.3	0.906	0.461
1961	345.8	515.6			1987	1143.0	1479.1	0.896	0.458
1962	374.5	600.3			1988	1280.0	1775.7	0.893	0.471
1963	402.2	663.0			1989	1389.0	1967.9	0.887	0.474
1964	413.6	682.3			1990	1541.0	2175.2	0.886	0.494
1965	413.6	671.2			1991	1652.0	2375.9	0.889	0.490
1966	408.9	634.4			1992	1828.0	2758.7	0.887	0.476
1967	407.0	645.5			1993	2042.0	3437.5	0.879	0.487
1968	400.3	634.4			1994	2819.0	4620.5	0.873	0.498
1969	399.3	628.9			1995	3522.0	5591.6	0.883	0.504
1970	400.3	608.6			1996	4050.0	6303.7	0.888	0.499
1971	407.0	584.7			1997	4311.0	6564.0	0.888	0.506
1972	404.1	598.5			1998	4528.0	7615.7	0.889	0.509
1973	416.5	589.3			1999	4832.0	8508.1	0.887	0.506
1974	461.4	596.7			2000	5184.0	9563.1	0.879	0.503
1975	439.4	593.0			2001	5741.0	11097.3	0.876	0.499
1976	438.5	583.8			2002	6398.0	12677.8	0.871	0.498
1977	438.5	581.9			2003	6884.0	14293.6	0.861	0.484
1978	470.0	628.9	0.895	0.417	2004	7497.0	16284.0	0.865	0.494
					2005	8207.0	18596.6	0.862	0.493
					2006	9269.0	21289.1	0.858	0.492
					2007	10847.0	25205.4	0.855	0.497
					2008	12560.0	29428.9		
					2009	14356.0	32796.5		
					2010	16717.0	37130.9		
					2011	19469.0	42371.2		

Table 14: Employment and Population, 60Y

year	Population	Employment				year	Population	Employment			
		Total	Primary	Secondary	Tertiary			Total	Primary	Secondary	Tertiary
1952	57482	20729	17317	1531	1881	1978	96259	40152	28318	6945	4890
1953	58796	21364	17747	1715	1902	1979	97542	41024	28634	7214	5177
1954	60266	21832	18151	1882	1799	1980	98705	42361	29122	7707	5532
1955	61465	22328	18592	1913	1823	1981	100072	43725	29777	8003	5945
1956	62828	23018	18544	2468	2006	1982	101654	45295	30859	8346	6090
1957	64653	23771	19309	2142	2320	1983	103008	46436	31151	8679	6606
1958	65994	26600	15490	7076	4034	1984	104357	48197	30868	9590	7739
1959	67207	26173	16271	5402	4500	1985	105851	49873	31130	10384	8359
1960	66207	25880	17016	4112	4752	1986	107507	51282	31254	11216	8811
1961	65859	25590	19747	2856	2987	1987	109300	52783	31663	11726	9395
1962	67295	25910	21276	2059	2575	1988	111026	54334	32249	12152	9933
1963	69172	26640	21966	2038	2636	1989	112704	55329	33225	11976	10129
1964	70499	27736	22801	2183	2752	1990	114333	64749	38914	13856	11979
1965	72538	28670	23396	2408	2866	1991	115823	65491	39098	14015	12378
1966	74542	29805	24297	2600	2908	1992	117171	66152	38699	14355	13098
1967	76368	30814	25165	2661	2988	1993	118517	66808	37680	14965	14163
1968	78534	31915	26063	2743	3109	1994	119850	67455	36628	15312	15515
1969	80671	33225	27117	3030	3078	1995	121121	68065	35530	15655	16880
1970	82992	34432	27811	3518	3103	1996	122389	68950	34820	16203	17927
1971	85229	35620	28397	3990	3233	1997	123626	69820	34840	16547	18432
1972	87177	35854	28283	4276	3295	1998	124761	70637	35177	16600	18860
1973	89211	36652	28857	4492	3303	1999	125786	71394	35768	16421	19205
1974	90859	37369	29218	4712	3439	2000	126743	72085	36043	16219	19823
1975	92420	38168	29456	5152	3560	2001	127627	73025	36513	16284	20228
1976	93717	38834	29443	5611	3780	2002	128453	73740	36870	15780	21090
1977	94974	39377	29340	5831	4206	2003	129227	74432	36546	16077	21809
1978	96259	40152	28318	6945	4890	2004	129988	75200	35269	16920	23011
						2005	130756	75825	33970	18084	23771
						2006	131448	76400	32561	19225	24614
						2007	132129	76990	31444	20629	24917
						2008	132802	77480	30654	21109	25717

Table 15: Employment and Population, CSY

	Population	Employment					Population	Employment			
year		Total	Primary	Secondary	Tertiary	year		Total	Primary	Secondary	Tertiary
1978	96259	40152	28318	6945	4890	1995	121121	68065	35530	15655	16880
1979	97542	41024	28634	7214	5177	1996	122389	68950	34820	16203	17927
1980	98705	42361	29122	7707	5532	1997	123626	69820	34840	16547	18432
1981	100072	43725	29777	8003	5945	1998	124761	70637	35177	16600	18860
1982	101654	45295	30859	8346	6090	1999	125786	71394	35768	16421	19205
1983	103008	46436	31151	8679	6606	2000	126743	72085	36043	16219	19823
1984	104357	48197	30868	9590	7739	2001	127627	72797	36399	16234	20165
1985	105851	49873	31130	10384	8359	2002	128453	73280	36640	15682	20958
1986	107507	51282	31254	11216	8811	2003	129227	73736	36204	15927	21605
1987	109300	52783	31663	11726	9395	2004	129988	74264	34830	16709	22725
1988	111026	54334	32249	12152	9933	2005	130756	74647	33442	17766	23439
1989	112704	55329	33225	11976	10129	2006	131448	74978	31941	18894	24143
1990	114333	64749	38914	13856	11979	2007	132129	75321	30731	20186	24404
1991	115823	65491	39098	14015	12378	2008	132802	75564	29923	20553	25087
1992	117171	66152	38699	14355	13098	2009	133450	75828	28890	21080	25857
1993	118517	66808	37680	14965	14163	2010	134091	76105	27931	21842	26332
1994	119850	67455	36628	15312	15515	2011	134735	76420	26594	22544	27282
1995	121121	68065	35530	15655	16880	2012	135404	76704	25773	23241	27690

For this purpose, we treat the primary sector as agricultural, and add up employment in the secondary and tertiary sectors to obtain employment in the non-agricultural sector.

At this point, we incorporate a correction proposed by Holz (2006), Appendix 13, page 236. The correction takes care of the reclassification of employed workers that was made by the NBS in 1990. As a consequence, for years prior to 1990 total employment values are adjusted up by a factor of approximately 1,1666. This correction increases the size of total employment, but does not tell us anything about sectoral employment. To adjust also the breakdown of employment into agricultural and non-agricultural activity, we use the proportions obtained from the official series, as described earlier.

1.4 Capital Inputs

We use Holz (2006), Tables 19 and 20 on pages 159-161, as our main source for aggregate and sectoral capital stock. We repeat the data on total and primary capital stock in current and 2000 prices in the right two panels of Table 18. We convert the series for total capital stock to 1978 yuan using the GDP deflator (see subsection on prices and wages).

We use the level of capital and its ratio to GDP in 1953 to estimate the initial level of

Table 16: Employment and Population, Merge of CSY, 60Y, Holz's correction

	Population	Employment				Population	Employment		
year		Total	Agriculture	Non-agriculture	year		Total	Agriculture	Non-agriculture
1952	574.82	241.83	202.03	39.81	1978	962.59	468.43	330.36	138.07
1953	587.96	249.24	207.04	42.20	1979	975.42	479.67	334.79	144.88
1954	602.66	254.70	211.76	42.94	1980	987.05	493.97	339.59	154.38
1955	614.65	260.49	216.90	43.59	1981	1000.72	510.39	347.58	162.81
1956	628.28	268.54	216.34	52.20	1982	1016.54	526.18	358.48	167.70
1957	646.53	277.32	225.27	52.06	1983	1030.08	541.17	363.04	178.14
1958	659.94	310.33	180.71	129.61	1984	1043.57	558.10	357.43	200.66
1959	672.07	305.35	189.82	115.52	1985	1058.51	575.51	359.22	216.29
1960	662.07	301.93	198.52	103.41	1986	1075.07	591.51	360.51	231.00
1961	658.59	298.54	230.38	68.17	1987	1093.00	607.44	364.38	243.06
1962	672.95	302.28	248.21	54.06	1988	1110.26	622.40	369.39	253.00
1963	691.72	310.79	256.26	54.53	1989	1127.04	635.61	381.68	253.94
1964	704.99	323.58	266.01	57.57	1990	1143.33	647.49	389.14	258.35
1965	725.38	334.48	272.95	61.53	1991	1158.23	654.91	390.98	263.93
1966	745.42	347.72	283.46	64.26	1992	1171.71	661.52	386.99	274.53
1967	763.68	359.49	293.59	65.90	1993	1185.17	668.08	376.80	291.28
1968	785.34	372.33	304.06	68.27	1994	1198.50	674.55	366.28	308.27
1969	806.71	387.62	316.36	71.26	1995	1211.21	680.65	355.30	325.35
1970	829.92	401.70	324.45	77.24	1996	1223.89	689.50	348.20	341.30
1971	852.29	415.56	331.29	84.27	1997	1236.26	698.20	348.40	349.79
1972	871.77	418.29	329.96	88.33	1998	1247.61	706.37	351.77	354.60
1973	892.11	427.60	336.66	90.94	1999	1257.86	713.94	357.68	356.26
1974	908.59	435.96	340.87	95.09	2000	1267.43	720.85	360.43	360.42
1975	924.20	445.28	343.65	101.64	2001	1276.27	727.97	363.99	363.99
1976	937.17	453.05	343.49	109.56	2002	1284.53	732.80	366.40	366.40
1977	949.74	459.39	342.29	117.10	2003	1292.27	737.36	362.04	375.32
1978	962.59	468.43	330.36	138.07	2004	1299.88	742.64	348.30	394.34
					2005	1307.56	746.47	334.42	412.05
					2006	1314.48	749.78	319.41	430.37
					2007	1321.29	753.21	307.31	445.90
					2008	1328.02	755.64	299.23	456.41
					2009	1334.50	758.28	288.90	469.38
					2010	1340.91	761.05	279.31	481.74
					2011	1347.35	764.20	265.94	498.26
					2012	1354.04	767.04	257.73	509.31

capital in 1978 prices. We apply the perpetual inventory method (with a depreciation rate of 5 percent) to our series for real investment in 1978 prices (computed using Gross Fixed Capital Formation as share of GDP) to obtain the series for aggregate capital in 1978 prices. The series that we obtain is largely consistent with Holz's estimates of aggregate capital stock for 1953-2006, with two minor differences: Holz computes capital in constant 2000 prices and uses a variable depreciation rate which ranges between 3 and 5 percent.

This measure works well for the later part of the sample, but for the pre-1970 period it implies unrealistically low values for non-agricultural consumption, which is computed as the residual between value added, government, trade and investment.[1] To eliminate the influence of this issue on the level of the capital and labor wedges, we augment our estimates with data on non-agricultural consumption expenditure from CSY, Table 2.19, that we present in Table 20. Data on non-agricultural consumption for the 1952-74 period is converted to 1978 yuans using the non-agricultural value added deflator, and investment is computed as the residual for the same period.

We also use data from Holz (2006) to divide the aggregate capital stock into capital used in the agricultural (primary) and non-agricultural sectors. This sectoral division of capital stock is only available for 1978-2011.

For earlier years we use the data on sectoral investment from Chow (1993) to estimate the composition of capital stock by sector. As shown in Table 17, we use net capital stock accumulation by sector from Table 5 on page 820 in Chow (1993), and then apply the perpetual inventory method to accumulate sectoral capital stock for 1953-1978. As initial values we use the value from the same table for non-agricultural capital, and the value of 450 for agricultural capital. We then break down by sector the total real capital stock in 1978 prices computed earlier using the relative proportions implied by Chow's data.

For the most recent period, 2003-2012, we use CSY 2013, Table 5-9, Investment in Fixed Assets, total and in the agricultural sector, to compute the breakdown of investment into agricultural investment and non-agricultural investment. Using the perpetual inventory method, we compute capital by sector in 2003-2012.

[1]The standard assumption that all investment is produced using non-agricultural goods plays an important role when the non-agricultural sector is small.

Table 17: Capital and Investment, Chow (1993)

	Capital Stock (cur prices)			Accumulation (cur prices)			Estimates of capital stock, Chow (1993) Table 5				
year	Ag	Non-Ag	Total	Ag	Non-ag	Land	Agric	Industry	Construction	Transportation	Commerce
1952	450	582.6	1032.6	8.20	126.00	720	0	248	9	152.3	173.3
1953	458.2	708.6	1166.8	7.30	150.50	720	8.2	299.1	18.2	162.6	228.7
1954	465.5	859.1	1324.6	9.10	147.30	720	15.5	366.3	27.8	179.7	285.3
1955	474.6	1006.4	1481	19.90	156.40	720	24.6	436.8	36.9	198	334.7
1956	494.5	1162.8	1657.3	14.60	186.90	720	44.5	539.2	47.5	219.3	356.8
1957	509.1	1349.7	1858.8	26.60	296.50	720	59.1	632	59.2	243.4	415.1
1958	535.7	1646.2	2181.9	28.20	439.40	720	85.7	844.4	61.6	287.4	452.8
1959	563.9	2085.6	2649.5	38.30	394.90	720	113.9	1147.8	67.4	350.4	520
1960	602.2	2480.5	3082.7	18.30	151.30	720	152.2	1436.6	73.9	406.3	563.7
1961	620.5	2631.8	3252.3	18.70	69.40	720	170.5	1545.4	76.1	427.9	582.4
1962	639.2	2701.2	3340.4	31.20	123.70	720	189.2	1600	79	437.2	585
1963	670.4	2824.9	3495.3	34.10	187.40	720	220.4	1682	83.8	445.1	614
1964	704.5	3012.3	3716.8	32.80	266.90	720	254.5	1805.5	91.1	460.5	655.2
1965	737.3	3279.2	4016.5	31.70	375.60	720	287.3	1957.2	100	494.2	727.8
1966	769	3654.8	4423.8	19.40	341.00	720	319	2198.5	108.8	537.3	810.2
1967	788.4	3995.8	4784.2	14.90	141.70	720	338.4	2352.1	114.2	563.4	966.1
1968	803.3	4137.5	4940.8	26.00	282.70	720	353.3	2496.4	118.1	584.5	938.5
1969	829.3	4420.2	5249.5	43.10	495.90	720	379.3	2682.7	125.2	621.7	990.6
1970	872.4	4916.1	5788.5	56.60	536.00	720	422.4	3001	137.1	681.6	1096.4
1971	929	5452.1	6381.1	52.50	507.20	720	479	3335.8	153.8	759.9	1202.6
1972	981.5	5959.3	6940.8	58.50	583.20	720	531.5	3657	169	836.2	1297.1
1973	1040	6542.5	7582.5	60.80	577.40	720	590	4015.7	186.1	917.1	1423.6
1974	1100.8	7119.9	8220.7	71.40	625.80	720	650.8	4384.2	204	1001.5	1530.2
1975	1172.2	7745.7	8917.9	82.30	586.70	720	722.2	4805.3	225.4	1092.7	1622.3
1976	1254.5	8332.4	9586.9	65.80	674.00	720	804.5	5239.1	246.2	1185.3	1661.8
1977	1320.3	9006.4	10326.7	137.60	828.00	720	870.3	5661.4	261.9	1263.3	1819.8
1978	1457.9	9834.4	11292.3	93.20	822.50	720	1007.9	6158.5	284.6	1383.6	2007.7
1979	1551.1	10656.9	12208	64.30	805.40	720	1101.1	6680.1	311.6	1464.9	2200.3
1980	1615.4	11462.3	13077.7	45.50	812.00	720	1165.4	7126	351	1551.1	2434.2
1981	1660.9	12274.3	13935.2	68.80	857.40	720	1210.9	7587.3	383.2	1597.5	2706.3
1982	1729.7	13131.7	14861.4	87.30	924.00	720	1279.7	8060.4	414.4	1686.8	2970.1
1983	1817	14055.7	15872.7	68.10	1071.50	720	1367	8614.4	451.7	1796.1	3193.5
1984	1885.1	15127.2	17012.3	143.50	1252.90	720	1435.1	9391.4	520.5	1957.4	3257.9
1985							1578.6	10514	606.9	2205.7	3053.5

Table 18: Capital and Investment, Merge of Holz (2006), Chow (1993), CSY

	Merge of Holz and Chow (1978 prices)				Capital Stock, Holz (2006), Table 19		Capital Stock, Holz (2006), Table 20	
year	Investment	Capital	Agric capital	Non-ag capital	2000 prices	1978 prices	Total	Primary
1952	0.1	52.6	22.9	29.7				
1953	1.8	50.0	19.6	30.4	179.2	50.0		
1954	3.6	49.4	17.3	32.0	219.4	61.2		
1955	2.2	50.5	16.2	34.3	263.6	73.6		
1956	5.8	50.1	15.0	35.2	327.2	91.4		
1957	7.0	53.4	14.6	38.8	393.3	109.8		
1958	27.2	57.7	14.2	43.5	494.2	138.0		
1959	37.8	82.0	17.5	64.6	610.6	170.5		
1960	40.3	115.7	22.6	93.1	736.7	205.7		
1961	3.9	150.2	28.7	121.6	798.2	222.9		
1962	0.1	146.7	28.1	118.6	842.5	235.2		
1963	2.7	139.4	26.7	112.7	897.4	250.6		
1964	15.6	135.1	25.6	109.5	975.9	272.5		
1965	27.8	144.0	26.4	117.5	1085.1	303.0		
1966	34.1	164.6	28.6	136.0	1188.1	331.7		
1967	23.4	190.5	31.4	159.1	1248.0	348.5		
1968	16.0	204.4	33.2	171.1	1296.8	362.1		
1969	31.0	210.1	33.2	176.9	1378.0	384.8		
1970	55.2	230.7	34.8	195.9	1511.8	422.1		
1971	62.4	274.4	39.9	234.4	1638.8	457.6		
1972	63.7	323.0	45.7	277.3	1768.0	493.7		
1973	72.8	370.6	50.8	319.7	1929.5	538.7		
1974	75.7	424.9	54.7	370.1	2101.2	586.7		
1975	90.1	479.3	57.8	421.6	2305.8	643.8		
1976	88.6	545.4	61.2	484.2	2490.6	695.4		
1977	92.3	606.8	63.0	543.7	2716.3	758.4		
1978	107.4	668.8	63.9	604.8	2994.1	836.0	267.5	25.6

Table 19: Capital and Investment, Merge of Holz (2006), Chow (1993), CSY

	Merge of Holz and Chow (1978 prices)				Capital Stock, Holz (2006), Table 19		Capital Stock, Holz (2006), Table 20	
year	Investment	Capital	Agric capital	Non-ag capital	2000 prices	1978 prices	Total	Primary
1978	107.4	668.8	63.9	604.8	2994.1	836.0	267.5	25.6
1979	111.3	742.7	71.8	671.0	3321.2	927.3	291.3	28.1
1980	123.0	816.9	79.5	737.3	3665.9	1023.6	310.5	30.2
1981	121.9	899.1	86.4	812.6	3989.0	1113.8	333.9	32.1
1982	137.1	976.0	95.2	880.7	4343.4	1212.7	356.1	34.8
1983	155.5	1064.2	103.2	961.0	4752.3	1326.9	391.5	38.0
1984	184.6	1166.5	103.5	1063.0	5232.0	1460.8	431.7	38.3
1985	208.4	1292.8	108.5	1184.2	5756.3	1607.2	484.1	40.6
1986	233.9	1436.5	115.2	1321.3	6404.1	1788.1	555.6	44.6
1987	269.0	1598.5	128.6	1469.9	7127.6	1990.1	654.7	52.7
1988	297.0	1787.6	137.9	1649.8	7897.6	2205.1	774.2	59.7
1989	257.2	1995.3	146.9	1848.4	8593.5	2399.4	908.8	66.9
1990	265.6	2152.7	145.0	2007.7	9316.8	2601.3	1043.5	70.3
1991	312.5	2310.6	141.8	2168.9	10088.2	2816.7	1204.1	73.9
1992	405.0	2507.6	144.0	2363.5	10955.8	3059.0	1312.5	75.4
1993	549.8	2787.2	155.8	2631.4	11927.1	3330.2	1443.7	80.7
1994	592.9	3197.7	176.6	3021.1	13055.1	3645.1	1608.2	88.8
1995	629.0	3630.7	194.6	3436.1	14406.2	4022.4	1941.2	104.0
1996	680.5	4078.1	207.0	3871.1	16078.5	4489.3	2345.6	119.1
1997	723.8	4554.7	215.7	4339.1	17888.4	4994.6	2855.0	135.2
1998	803.5	5050.8	218.0	4832.8	19783.7	5523.8	3207.2	138.4
1999	869.7	5601.8	222.6	5379.2	21883.4	6110.1	3493.6	138.8
2000	945.0	6191.4	227.0	5964.3	24145.5	6741.7	3567.5	130.8
2001	1032.9	6826.8	237.5	6589.3	26483.0	7394.3	3733.5	129.9
2002	1186.6	7518.4	249.5	7268.9	29090.4	8122.3	3871.0	128.4
2003	1418.0	8329.1	273.8	8055.3	31944.7	8919.3		
2004	1614.4	9330.7	302.2	9028.4	35269.1	9847.5		
2005	1771.0	10478.6	330.4	10148.1	38933.4	10870.6		
2006	2021.4	11725.6	360.3	11365.3				
2007	2219.5	13160.7	392.8	12767.9				
2008	2537.8	14722.1	428.2	14294.0				
2009	3123.3	16523.8	481.1	16042.7				
2010	3432.3	18820.9	552.9	18268.0				
2011	3748.9	21312.2	623.1	20689.1				
2012	4073.0	23995.5	697.3	23298.2				

Table 20: Expenditure by sector, CSY1987

	Consumption Expenditure (0.1 billion yuan)					non-ag	non-ag
year	total	resident	agricultural	Non-agricultural	society	price	real expend.
1952	477	434	298	136	43	1.97	69.17
1953	559	508	332	176	51	1.59	110.81
1954	570	527	348	179	43	1.52	118.11
1955	622	575	389	186	47	1.52	122.60
1956	671	613	397	216	58	1.33	162.98
1957	702	649	412	237	53	1.34	177.04
1958	738	683	435	248	55	1.18	210.11
1959	716	641	339	302	75	1.08	278.70
1960	763	683	346	337	80	1.04	323.05
1961	818	755	418	337	63	1.24	272.69
1962	849	781	459	322	67	1.29	250.31
1963	864	793	487	306	71	1.25	245.30
1964	921	841	539	302	80	1.22	246.79
1965	982	895	581	314	87	1.17	267.45
1966	1065	969	637	332	96	1.13	292.58
1967	1124	1026	679	347	98	1.17	296.85
1968	1111	1020	670	350	91	1.17	297.98
1969	1180	1068	705	363	112	1.07	338.68
1970	1258	1145	770	375	113	1.02	368.49
1971	1324	1195	804	391	129	1.01	386.24
1972	1404	1263	824	439	141	1.01	435.87
1973	1511	1364	898	466	147	1.01	462.85
1974	1550	1396	915	481	154	1.01	475.75
1975	1621	1450	946	504	171	0.99	509.62
1976	1676	1502	965	537	174	0.98	547.38
1977	1741	1553	974	579	188	1.00	580.82
1978	1888	1673	1043	630	215	1.00	630.00

1.5 Defense Spending

The data on defense spending comes from three main sources. The earlier period of 1952- 1995 is jointly covered by HL and CSY, which report nominal defense spending in yuan. For the period 1983-2011 an alternative source of data is the website of the Stockholm International Peace Research Institute (SIPRI) which reports spending on defense for a variety of countries as a percent of GDP. For the overlapping period the trends are broadly consistent, but the exact estimates vary by a factor of 1 to 1.5. As there seems to be no reliable way of obtaining more precise estimates, we average the two available sources for the overlapping period. We obtain an estimate of real defense spending in 1978 prices using the share of defense in GDP from these two sources.

1.6 Foreign Trade

The main source for data on sectoral exports and imports is Fukao, Kiyota and Yue (2006) (FKY). FKY report data on China's exports and imports by commodity at the SITC-R 2-digit level for 1952-1964 and for 1981-2000, obtained from the "China's Long-Term International Trade Statistics" database. Using data from FKY, we construct estimates of nominal exports and imports of agricultural and non-agricultural commodities. We then subtract imports from exports to obtain estimates of net exports by sector. We use the price deflators computed earlier to estimate real net exports by sector in 1978 prices. For the 1965-1980 period, to our knowledge, there is no available data on trade by sector. We linearly interpolate the ratios of net export to value added by sector for this intermediate period. For the 2001-2012 period we use data directly comparable to that reported by FKY, now available in CSY.

1.7 Final Dataset

In this subsection, we combine series constructed and reported in previous subsections into a final dataset. Tables 23 and 25 present the combined dataset used in the analysis.

Table 23 presents total value added (GDP), value added by agriculture (YA) and non-agriculture (YM), which in turn is split into state (YS) and private (YP) non-agriculture. Agricultural value added is either consumed (CA) or exported (exA). Non-agricultural value added produced (YM) plus imported (ImM) is used either for consumption (CM), investment (Inv) or defense spending (GM). All values in Table 23 are in constant prices in 100 million of

Table 21: Defense Spending (CSY, SIPRI)

year	Defense as Share of GDP	year	Defense as Share of GDP	year	Defense as Share of GDP
1952	0.067	1972	0.075	1992	0.014
1953	0.069	1973	0.063	1993	0.012
1954	0.059	1974	0.057	1994	0.011
1955	0.082	1975	0.057	1995	0.010
1956	0.069	1976	0.055	1996	0.010
1957	0.061	1977	0.056	1997	0.010
1958	0.045	1978	0.056	1998	0.011
1959	0.047	1979	0.066	1999	0.012
1960	0.048	1980	0.053	2000	0.012
1961	0.050	1981	0.043	2001	0.013
1962	0.062	1982	0.041	2002	0.014
1963	0.066	1983	0.042	2003	0.014
1964	0.063	1984	0.036	2004	0.017
1965	0.063	1985	0.032	2005	0.014
1966	0.064	1986	0.029	2006	0.013
1967	0.056	1987	0.026	2007	0.014
1968	0.067	1988	0.024	2008	0.014
1969	0.078	1989	0.015	2009	0.014
1970	0.075	1990	0.016	2010	0.013
1971	0.082	1991	0.015	2011	0.013
1972	0.075	1992	0.014	2012	0.012

Table 22: Foreign Trade by Sector (CSY, Fukao Kiyota Yue (2006))

	Share of Agric goods in		Sectoral Trade (100mil yuan)			Share of Agric goods in		Sectoral Trade (100mil yuan)	
year	Exports	Imports	Export of Agric.	Import of Non-ag.	year	Exports	Imports	Export of Agric.	Import of Non-ag.
1952	0.339	0.020	8.42	18.82	1978	0.183	0.218	-10.13	9.67
1953	0.326	0.023	10.31	21.61	1979	0.178	0.210	-13.27	17.93
1954	0.354	0.040	12.35	17.05	1980	0.173	0.202	-13.39	14.21
1955	0.340	0.028	14.82	27.22	1981	0.167	0.193	-9.55	-9.45
1956	0.331	0.022	17.27	14.57	1982	0.163	0.228	-14.35	-70.65
1957	0.283	0.018	14.51	10.01	1983	0.158	0.091	30.84	14.34
1958	0.334	0.028	20.67	15.37	1984	0.153	0.068	46.71	86.71
1959	0.305	0.011	23.03	16.13	1985	0.148	0.045	63.58	512.48
1960	0.487	0.016	29.78	31.58	1986	0.141	0.052	74.26	490.46
1961	0.143	0.291	-5.67	-10.37	1987	0.135	0.060	100.46	244.66
1962	0.159	0.367	-4.91	-18.21	1988	0.128	0.068	85.87	374.27
1963	0.211	0.339	-1.57	-15.87	1989	0.121	0.076	69.87	313.77
1964	0.256	0.332	0.23	-13.07	1990	0.115	0.084	126.09	-285.41
1965	0.251	0.324	-2.06	-9.86	1991	0.110	0.058	222.62	-205.78
1966	0.246	0.316	-3.06	-7.96	1992	0.108	0.049	289.15	56.15
1967	0.241	0.308	-2.27	-7.67	1993	0.104	0.028	377.48	1078.88
1968	0.235	0.299	-1.68	-8.38	1994	0.095	0.043	559.53	97.83
1969	0.230	0.291	0.02	-12.58	1995	0.079	0.069	221.97	-1181.73
1970	0.225	0.283	-3.10	-3.80	1996	0.079	0.057	340.07	-678.93
1971	0.220	0.275	0.65	-15.45	1997	0.070	0.044	536.11	-2818.09
1972	0.215	0.267	0.71	-18.19	1998	0.064	0.039	524.94	-3072.56
1973	0.209	0.259	-2.33	-15.63	1999	0.058	0.031	511.25	-1912.15
1974	0.204	0.250	-9.83	3.57	2000	0.053	0.027	583.24	-1412.36
1975	0.199	0.242	-7.28	-2.88	2001	0.052	0.025	629.84	-1235.36
1976	0.194	0.234	-4.18	-9.68	2002	0.048	0.025	699.60	-1818.00
1977	0.188	0.226	-3.70	-10.60	2003	0.043	0.023	762.68	-1329.62
1978	0.183	0.218	-10.13	9.67	2004	0.034	0.025	522.49	-2145.01
					2005	0.031	0.021	854.02	-7520.38
					2006	0.028	0.019	986.50	-13233.84
					2007	0.027	0.021	935.01	-19328.49
					2008	0.024	0.023	588.77	-20279.65
					2009	0.029	0.024	695.20	-12716.12
					2010	0.028	0.023	724.09	-11599.45
					2011	0.028	0.025	631.86	-9447.34
					2012	0.027	0.029	191.15	-14367.14

1978 yuan.

The left panel of Table 25 presents total capital stock (K) broken down by sector: agriculture (KA), non-agriculture (KM), in turn broken down into state (KS) and private (KP) non-agriculture. Like value added, the capital stock is measured in 100 million of 1978 yuan. The central panel of Table 25 presents total employment (N) split into: agriculture (NA), non-agriculture (NM), in turn split into state (NS) and private (NP) non-agriculture. Employment, as well as total population (POP), are measured in million persons. The right panel of Table 25 presents the index of relative prices of agricultural and non-agricultural goods (pA/pM) and the ratio of wages in agriculture to wages in non-agriculture (wA/wM). The index of relative prices is normalized to 1 in 1978.

1.8 Prominent Alternative Data Sources

To check the validity of the break down of capital stock by sector for the pre-reform period, we construct sectoral capital series using provincial data on investment in fixed assets by type of unit from the the China Compendium of Statistics 1949-2008 (Table 8). For 5 provinces (Fujian, Hunan, Jilin, Shanghai, Shanxi), the data on rural and urban investments go back to 1950; in case of Tianjin, they start in 1956. We attributed all the fixed asset investments of collectively-owned units in rural areas to the the agricultural sector and all fixed asset investments in other units in rural areas and all units in urban areas - to the non-agricultural sector. This gave us data on investment by sector by province. We aggregated data on agricultural and non-agricultural investment for the available provinces. We found that the share of agricultural investment in total investment from this provincial dataset traces very closely the series obtained from Chow as described above. The similarity is illustrated in Figure 1.

As another robustness check for the level of agricultural capital we employ data from Tang (1982), who reports farm capital in 1952 yuan, as shown in Table 27. Figure 2 compares the paths of farm capital according to Tang (1982) with our baseline series.

In Table 11 we also report indexes of agricultural and industrial goods prices advocated by Young (2003). These are the General Purchasing Price Index for Farm Products and the Ex-Factory Price Index for Industrial Products, available from the CSY for various years. For pre-1978 values we also use Chow (1987) who cites CSY 1981. The path of the relative prices is extremely close to the relative value added deflator series from the CSY for the pre-reform

Table 23: Value Added by Sector and by Use

year	GDP	YA	CA	exA	YM	CM	Inv	ImM	GM
1952	77.33	60.39	58.92	1.47	16.94	12.60	0.08	0.96	5.21
1953	89.41	61.53	59.87	1.66	27.88	21.23	1.83	1.36	6.17
1954	93.17	62.57	60.61	1.95	30.61	22.63	3.58	1.13	5.52
1955	99.55	67.52	65.17	2.36	32.03	23.49	2.17	1.79	8.16
1956	114.51	70.66	67.94	2.73	43.85	31.23	5.81	1.10	7.90
1957	120.31	72.84	70.40	2.44	47.47	33.93	6.95	0.75	7.34
1958	145.88	73.16	69.80	3.36	72.72	40.26	27.19	1.30	6.56
1959	158.74	61.55	57.89	3.66	97.19	53.40	37.81	1.49	7.46
1960	158.23	51.47	47.01	4.46	106.76	61.90	40.29	3.03	7.60
1961	115.00	52.22	52.88	-0.67	62.78	52.25	3.94	-0.84	5.75
1962	108.55	54.59	55.18	-0.59	53.96	45.72	0.09	-1.42	6.73
1963	119.63	60.76	60.95	-0.19	58.87	47.01	2.70	-1.27	7.90
1964	141.47	68.62	68.59	0.03	72.85	47.29	15.58	-1.07	8.91
1965	165.57	75.26	75.50	-0.24	90.31	51.25	27.79	-0.84	10.43
1966	183.33	80.70	81.05	-0.35	102.63	56.07	34.13	-0.70	11.73
1967	172.88	82.22	82.48	-0.26	90.65	56.88	23.43	-0.66	9.68
1968	165.81	80.90	81.09	-0.19	84.91	57.10	15.99	-0.71	11.11
1969	193.82	81.58	81.58	0.00	112.24	64.90	31.05	-1.17	15.12
1970	231.42	87.87	88.21	-0.34	143.55	70.61	55.21	-0.37	17.36
1971	247.73	89.53	89.46	0.07	158.21	74.01	62.35	-1.53	20.31
1972	257.06	88.73	88.65	0.08	168.33	83.52	63.72	-1.81	19.28
1973	277.26	96.72	96.96	-0.25	180.54	88.69	72.83	-1.55	17.47
1974	283.66	100.67	101.71	-1.04	182.99	91.49	75.69	0.35	16.17
1975	308.32	102.72	103.48	-0.76	205.60	97.65	90.08	-0.29	17.57
1976	303.32	100.90	101.34	-0.43	202.42	96.14	88.61	-0.99	16.68
1977	326.43	98.67	99.05	-0.38	227.76	116.09	92.33	-1.06	18.28
1978	364.52	102.75	103.77	-1.01	261.77	134.93	107.39	0.97	20.41

Table 24: Value Added by Sector and by Use

year	GDP	YA	CA	exA	YM	CM	Inv	ImM	GM
1978	364.52	102.75	103.77	-1.01	261.77	134.93	107.39	0.97	20.41
1979	392.13	109.06	110.20	-1.14	283.07	147.71	111.30	1.82	25.88
1980	422.87	107.44	108.49	-1.05	315.44	171.41	123.02	1.41	22.41
1981	445.05	114.94	115.65	-0.70	330.11	188.18	121.85	-0.94	19.14
1982	485.35	128.19	129.23	-1.03	357.16	193.09	137.05	-7.12	19.90
1983	538.03	138.87	136.70	2.16	399.16	222.36	155.50	1.44	22.74
1984	619.68	156.75	153.59	3.16	462.93	264.22	184.58	8.21	22.34
1985	703.13	159.64	155.69	3.96	543.48	355.99	208.38	43.17	22.29
1986	765.33	164.94	160.55	4.39	600.39	383.99	233.86	39.33	21.88
1987	853.98	172.70	167.33	5.37	681.28	408.85	269.02	18.89	22.29
1988	950.31	177.09	173.16	3.93	773.22	479.63	297.04	25.89	22.44
1989	988.93	182.54	179.55	2.99	806.39	554.23	257.20	19.88	14.83
1990	1026.89	195.92	191.04	4.88	830.98	531.54	265.57	-17.43	16.43
1991	1121.15	200.62	192.26	8.36	920.53	579.74	312.45	-11.52	16.82
1992	1280.81	210.05	199.70	10.35	1070.76	650.67	405.02	2.86	17.93
1993	1459.67	219.92	208.00	11.92	1239.74	719.56	549.81	47.15	17.52
1994	1650.60	228.72	215.35	13.37	1421.88	814.43	592.90	3.60	18.16
1995	1830.93	240.16	235.77	4.39	1590.77	904.83	628.99	-38.63	18.31
1996	2014.18	252.41	246.29	6.12	1761.77	1040.18	680.52	-20.93	20.14
1997	2201.43	261.24	251.55	9.70	1940.19	1109.65	723.79	-84.73	22.01
1998	2373.88	270.39	260.81	9.58	2103.50	1180.98	803.53	-92.88	26.11
1999	2554.77	277.96	268.34	9.62	2276.81	1318.36	869.68	-58.12	30.66
2000	2770.17	284.63	273.52	11.11	2485.54	1465.67	944.97	-41.66	33.24
2001	3000.10	292.60	280.92	11.68	2707.50	1599.93	1032.94	-35.63	39.00
2002	3272.57	301.08	288.35	12.74	2971.49	1687.01	1186.62	-52.05	45.82
2003	3600.66	308.61	295.07	13.54	3292.05	1786.65	1418.04	-36.96	50.41
2004	3963.78	328.05	320.05	8.00	3635.73	1897.60	1614.43	-56.32	67.38
2005	4412.09	345.21	332.06	13.15	4066.88	2045.93	1770.99	-188.19	61.77
2006	4971.39	362.47	347.60	14.87	4608.92	2205.69	2021.38	-317.22	64.63
2007	5675.46	376.04	363.76	12.28	5299.42	2568.64	2219.46	-431.86	79.46
2008	6222.27	396.27	389.35	6.92	5826.00	2779.67	2537.77	-421.44	87.11
2009	6795.60	412.85	404.70	8.15	6382.76	2898.13	3123.28	-265.52	95.82
2010	7505.54	430.48	422.79	7.69	7075.06	3315.90	3432.35	-227.34	99.47
2011	8203.54	448.78	442.81	5.97	7754.77	3729.44	3748.93	-172.13	104.27
2012	8831.31	469.19	467.48	1.71	8362.12	3924.21	4072.96	-257.50	107.46

Table 25: Capital and Labor Input by Sector, Relative Prices and Wages

year	K	KA	KM	N	NA	NM	POP	pA/pM	wA/wM
1952	52.58	22.91	29.67	241.8	202.0	39.8	574.82	0.291	0.755
1953	50.03	19.65	30.38	249.2	207.0	42.2	587.96	0.390	0.780
1954	49.36	17.35	32.02	254.7	211.8	42.9	602.66	0.417	0.798
1955	50.47	16.17	34.30	260.5	216.9	43.6	614.65	0.415	0.797
1956	50.12	14.96	35.17	268.5	216.3	52.2	628.28	0.478	0.767
1957	53.43	14.63	38.80	277.3	225.3	52.1	646.53	0.445	0.753
1958	57.71	14.17	43.54	310.3	180.7	129.6	659.94	0.521	0.929
1959	82.02	17.46	64.56	305.3	189.8	115.5	672.07	0.581	0.830
1960	115.73	22.61	93.12	301.9	198.5	103.4	662.07	0.640	0.704
1961	150.23	28.66	121.57	298.5	230.4	68.2	658.59	0.690	0.671
1962	146.66	28.06	118.60	302.3	248.2	54.1	672.95	0.651	0.624
1963	139.42	26.74	112.68	310.8	256.3	54.5	691.72	0.662	0.607
1964	135.15	25.62	109.53	323.6	266.0	57.6	704.99	0.672	0.606
1965	143.97	26.43	117.55	334.5	272.9	61.5	725.38	0.743	0.616
1966	164.56	28.61	135.96	347.7	283.5	64.3	745.42	0.774	0.644
1967	190.47	31.39	159.08	359.5	293.6	65.9	763.68	0.750	0.630
1968	204.38	33.23	171.15	372.3	304.1	68.3	785.34	0.771	0.631
1969	210.15	33.20	176.95	387.6	316.4	71.3	806.71	0.850	0.635
1970	230.69	34.77	195.92	401.7	324.5	77.2	829.92	0.895	0.658
1971	274.37	39.94	234.42	415.6	331.3	84.3	852.29	0.920	0.696
1972	323.00	45.68	277.33	418.3	330.0	88.3	871.77	0.934	0.675
1973	370.57	50.83	319.75	427.6	336.7	90.9	892.11	0.940	0.707
1974	424.88	54.74	370.14	436.0	340.9	95.1	908.59	0.937	0.773
1975	479.32	57.77	421.55	445.3	343.6	101.6	924.20	0.964	0.741
1976	545.43	61.20	484.23	453.1	343.5	109.6	937.17	0.986	0.751
1977	606.77	63.03	543.73	459.4	342.3	117.1	949.74	0.966	0.753
1978	668.76	63.91	604.85	468.4	330.4	138.1	962.59	1.000	0.747

Table 26: Capital and Labor Input by Sector, Relative Prices and Wages

year	K	KA	KM	N	NA	NM	POP	pA/pM	wA/wM
1978	668.76	63.91	604.85	468.4	330.4	138.1	962.59	1.000	0.747
1979	742.71	71.76	670.95	479.7	334.8	144.9	975.42	1.181	0.776
1980	816.88	79.54	737.34	494.0	339.6	154.4	987.05	1.269	0.796
1981	899.05	86.45	812.61	510.4	347.6	162.8	1000.72	1.344	0.814
1982	975.95	95.25	880.71	526.2	358.5	167.7	1016.54	1.397	0.818
1983	1064.21	103.19	961.02	541.2	363.0	178.1	1030.08	1.427	0.826
1984	1166.50	103.53	1062.97	558.1	357.4	200.7	1043.57	1.398	0.779
1985	1292.75	108.52	1184.23	575.5	359.2	216.3	1058.51	1.353	0.753
1986	1436.49	115.20	1321.29	591.5	360.5	231.0	1075.07	1.356	0.778
1987	1598.52	128.62	1469.90	607.4	364.4	243.1	1093.00	1.445	0.773
1988	1787.62	137.86	1649.76	622.4	369.4	253.0	1110.26	1.510	0.721
1989	1995.27	146.88	1848.40	635.6	381.7	253.9	1127.04	1.481	0.706
1990	2152.71	145.03	2007.68	647.5	389.1	258.4	1143.33	1.578	0.708
1991	2310.65	141.80	2168.85	654.9	391.0	263.9	1158.23	1.491	0.695
1992	2507.57	144.05	2363.52	661.5	387.0	274.5	1171.71	1.420	0.663
1993	2787.21	155.76	2631.45	668.1	376.8	291.3	1185.17	1.384	0.594
1994	3197.66	176.59	3021.07	674.6	366.3	308.3	1198.50	1.541	0.610
1995	3630.67	194.55	3436.12	680.7	355.3	325.4	1211.21	1.652	0.630
1996	4078.13	207.04	3871.09	689.5	348.2	341.3	1223.89	1.711	0.642
1997	4554.75	215.69	4339.06	698.2	348.4	349.8	1236.26	1.662	0.657
1998	5050.80	218.03	4832.78	706.4	351.8	354.6	1247.61	1.657	0.595
1999	5601.79	222.62	5379.17	713.9	357.7	356.3	1257.86	1.615	0.568
2000	6191.38	227.03	5964.35	720.9	360.4	360.4	1267.43	1.549	0.542
2001	6826.78	237.49	6589.29	728.0	364.0	364.0	1276.27	1.556	0.517
2002	7518.38	249.45	7268.92	732.8	366.4	366.4	1284.53	1.572	0.505
2003	8329.08	273.77	8055.31	737.4	362.0	375.3	1292.27	1.565	0.482
2004	9330.66	302.24	9028.42	742.6	348.3	394.3	1299.88	1.714	0.460
2005	10478.56	330.44	10148.12	746.5	334.4	412.1	1307.56	1.625	0.441
2006	11725.62	360.28	11365.34	749.8	319.4	430.4	1314.48	1.590	0.435
2007	13160.72	392.80	12767.93	753.2	307.3	445.9	1321.29	1.701	0.430
2008	14722.15	428.16	14293.98	755.6	299.2	456.4	1328.02	1.767	0.427
2009	16523.81	481.12	16042.69	758.3	288.9	469.4	1334.50	1.782	0.438
2010	18820.90	552.95	18267.95	761.1	279.3	481.7	1340.91	1.845	0.450
2011	21312.20	623.08	20689.12	764.2	265.9	498.3	1347.35	1.928	0.459
2012	23995.52	697.33	23298.19	767.0	257.7	509.3	1354.04	2.001	0.444

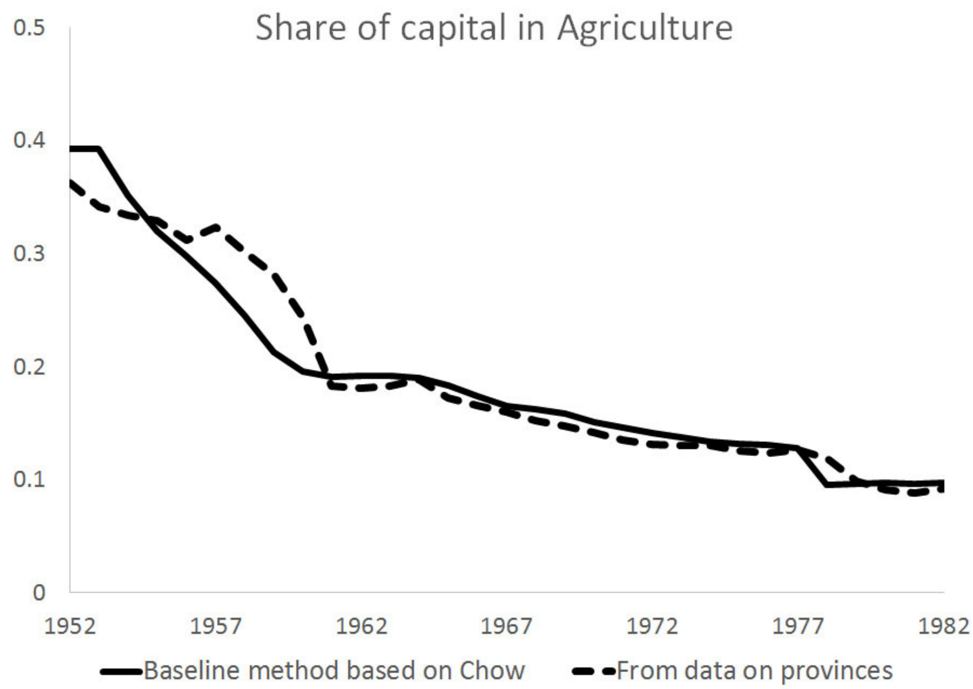

Figure 1: Alternative Series Sectoral Capital Stock

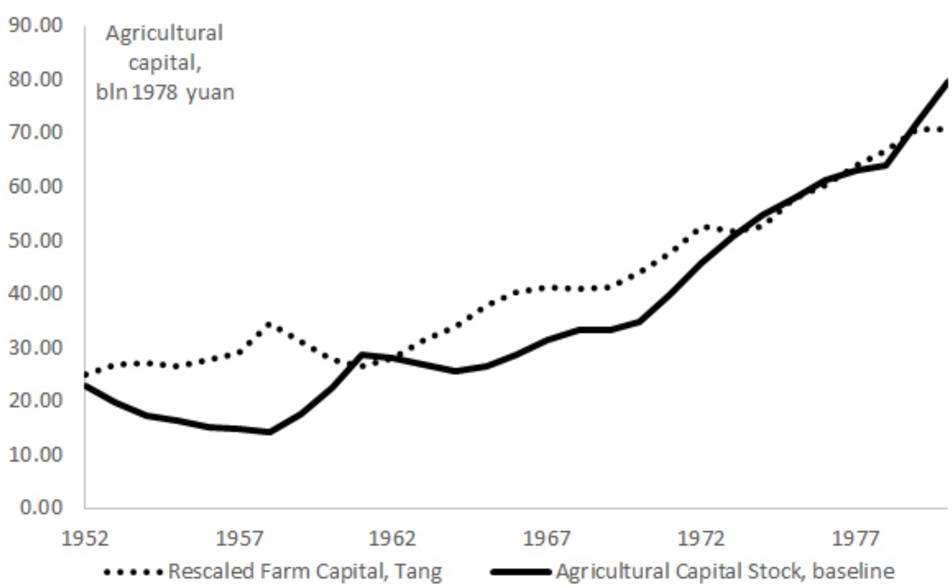

Figure 2: Alternative Series Sectoral Capital Stock

Table 27: Farm Capital (CSY, Tang (1982))

year	Farm Capital bln 1952 yuan	GDP deflator index	Farm Capital bln 1978 yuan	Agricultural Capital Stock bln 1978 yuan
1952	11.292	0.88	25.03	22.91
1953	12.024	0.92	26.65	19.65
1954	12.166	0.92	26.97	17.35
1955	11.885	0.91	26.35	16.17
1956	12.43	0.90	27.55	14.96
1957	13.084	0.89	29.00	14.63
1958	15.532	0.90	34.43	14.17
1959	14.014	0.91	31.07	17.46
1960	12.455	0.92	27.61	22.61
1961	11.887	1.06	26.35	28.66
1962	12.604	1.06	27.94	28.06
1963	14.132	1.03	31.33	26.74
1964	15.308	1.03	33.93	25.62
1965	17.103	1.04	37.91	26.43
1966	18.106	1.02	40.14	28.61
1967	18.542	1.03	41.10	31.39
1968	18.399	1.04	40.79	33.23
1969	18.519	1.00	41.05	33.20
1970	19.893	0.98	44.10	34.77
1971	21.468	0.98	47.59	39.94
1972	23.697	0.98	52.53	45.68
1973	23.28	0.99	51.61	50.83
1974	23.77	0.99	52.69	54.74
1975	26.06	0.98	57.77	57.77
1976	27.19	0.98	60.27	61.20
1977	28.85	0.99	63.95	63.03
1978	30.1	1.00	66.72	63.91
1979	31.92	1.04	70.76	71.76
1980	31.833	1.07	70.57	79.54

Figure 3: Alternative Series Sectoral Capital Stock

period, as shown in Figure 3.

As a robustness check for our wage series, we use the data on the labor share from Bai and Qian (2010) reported in Table 13. Figure 4 compares the ratios of agricultural to non-agricultural wage rates computed for staff and workers from the CSY (our baseline estimate) and inferred from the labor shares reported by Bai and Qian (alternative estimate) for the overlapping period 1978-2007. From Figure 4 we conclude that the ratio of agricultural to non-agricultural staff and worker wages follows the same trend as the ratio of labor remuneration in agriculture per agricultural worker to labor remuneration in non-agriculture per non-agricultural worker.

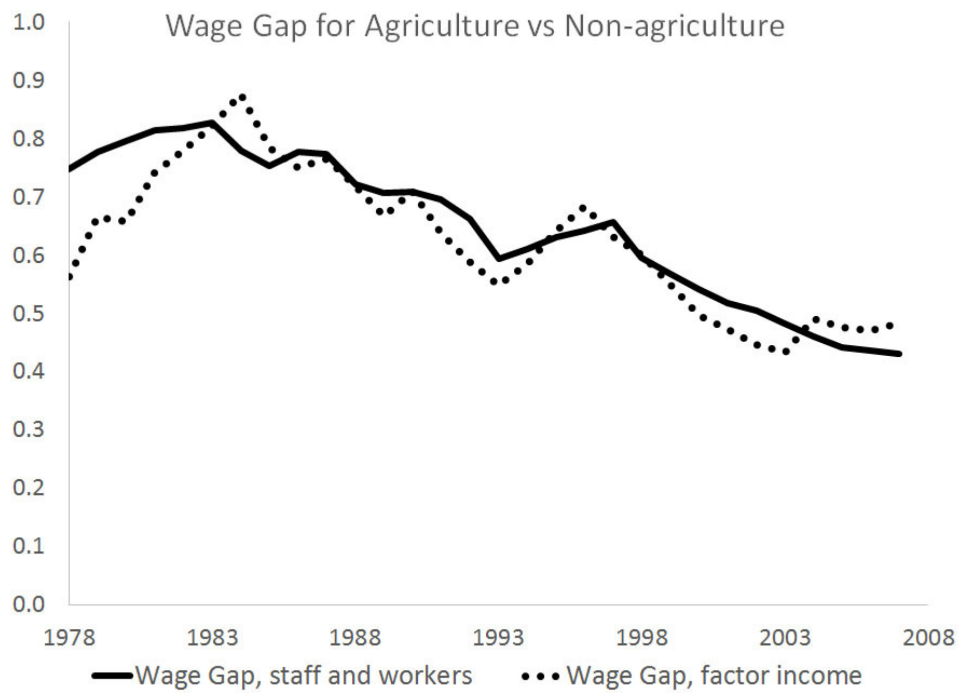

Figure 4: Alternative Series for Wages

2 Computation of Wedges

2.1 Formulas

Here we first present the formulas to compute the wedges. For the sake of simplicity, we redefine production shares as $\alpha_{K,i} = \alpha_i$, $\alpha_{N,i} = \beta_i$, where $i = A, M$. Then the wedges and their components are as follows:

1. Consumption component of the labor wedge

$$\tau_t^C = \frac{(1-\eta)}{\eta} \frac{p_{A,t}}{p_{M,t}} \frac{C_t^A - \gamma^A}{C_t^M},$$

2. Production component of the labor wedge:

$$\tau_t^P = \frac{\beta_M}{\beta_A} \frac{Y_t^M}{N_t^M} \frac{N_t^A}{Y_t^A} \frac{w_t^A}{w_t^M} \frac{p_{M,t}}{p_{A,t}},$$

3. Mobility component of labor wedge:

$$\tau_t^M = \frac{w_t^M}{w_t^A},$$

4. Non-consumption component of capital wedge:

$$\tau_t^R = \frac{\alpha_M}{\alpha_A} \frac{Y_t^M}{K_t^M} \frac{Y_t^A}{K_t^A} \frac{p_{M,t}}{p_{A,t}},$$

5. Manufacturing TFP:

$$X_t^M = Y_t^M / \left(K_t^M\right)^{\alpha_M} / \left(N_t^M\right)^{\beta_M},$$

6. Agricultural TFP:

$$X_t^A = Y_t^A / \left(K_t^A\right)^{\alpha_A} / \left(N_t^A\right)^{\beta_A},$$

7. Investment wedge:

$$\tau_{K,t} = \beta \frac{C_t^M}{C_{t+1}^M} \left(\alpha_M \frac{Y_{t+1}^M}{K_{t+1}^M} + 1 - \delta\right),$$

8. Agricultural exports as share of agricultural output:

$$x_t = E_t^A / Y_t^A,$$

9. Non-agricultural exports and agricultural exports terms of trade factor:

$$q_t = -E_t^M / E_t^A,$$

10. defense spending as fraction of non-agricultural production:

$$g_t = G_t / Y_t^{\mathrm{M}}.$$

Using the data presented in the previous section and the parameters shown in Table 28 it is straightforward to compute the wedges.

Table 28: Parameters

Parameter	Description	Value
$\alpha_{K,A} = \alpha_A$	Factor shares	0.14
$\alpha_{N,A} = \beta_A$	of the	0.55
$\alpha_{K,M} = \alpha_M$	production	0.3
$\alpha_{N,M} = \beta_M$	functions	0.7
γ^A	Subsistence level	54
η	Asymptotic share	0.15
β	Discount factor	0.96
σ	Elasticity of substitution	1.0
δ	Depreciation	0.05

2.2 Wedges and the Policy Cycle

Wedges and their components are presented in Figure 2 in the main text. Here we illustrate via Figure 5, along the lines of Figure 3 in the main text, how starting with the 1973 party congress, the 5-year political cycle is almost perfectly correlated with the left-right wing policy swings. Each 5-year party congress cycle consists of a 2-3 year right-wing period of high TFP growth and little change to labor and capital wedges, followed by a 2-3 year period of slow TFP growth and fast decline in the labor and capital wedges. The investment wedge seems to move in a synchronized way with these right-left swings with a small lag. As demonstrated by Figure 5, this pattern of alternating left- and right-wing swings continued into the post-1978 period and became much more regular, with the timing of the swings associated very closely with party congresses (shown by vertical black lines).[2]

[2]The Seven Thousand Cadres Conference of 1962 was akin to a party congress in that it laid the path out of the GLF and introduced the main ideas of the cultural revolution.

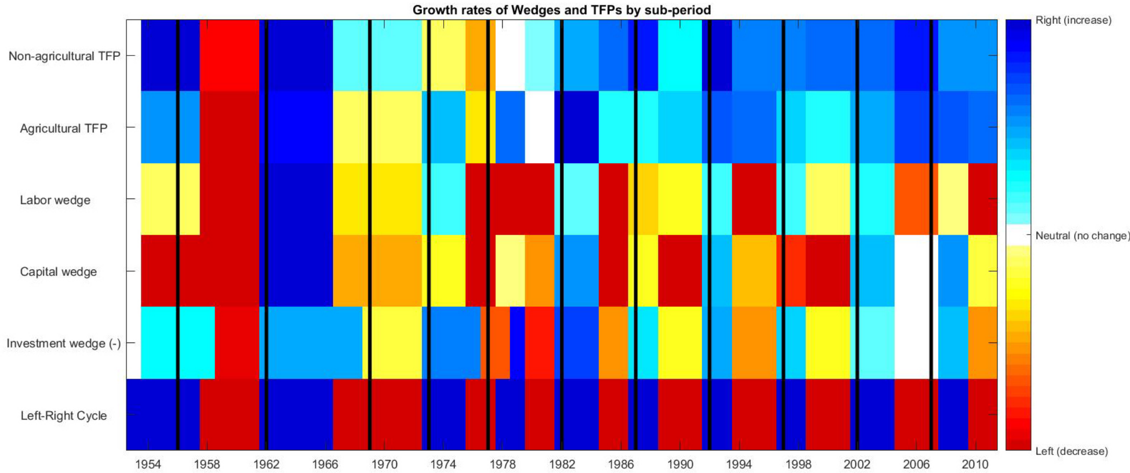

Figure 5: Elasticities of GDP to wedges and TFPs

2.3 Factorization of wedges and components

Then, we analyze the components of wedges as well as factors they are comprised of. In Figure 6 we show three factors that comprise the consumption wedge: the variation due to change in real agricultural consumption, the variation due to change in real manufacturing consumption, and variation due to change in relative prices. It follows that the expansion of non-agricultural consumption significantly reduces the consumption wedge over the course of the pre-reform period, while the expansion of the agricultural consumption increases it, and so does the appreciation of agricultural goods relative to non-agricultural goods. The abrupt drop in the consumption component during the GLF is explained by the drop in agricultural component approaching subsistence. A similar picture is obtained if the distortions of the prices by sector relative to marginal utility by sector are compared. The distortion of each price from marginal utility changes slowly over time, although both increase at a largely the same rate, so the consumption component is at a similar level at the beginning and the end of the pre-reform period.

Finally, we look at how the components of wedges change if we use alternative calibrations and data series. Most important is the behavior of the consumption wedge. Figure 7 shows the paths of the consumption wedge, if 1) instead of value added deflators we used Young's (2003) prices, 2) if we did not use non-agricultural consumption data from Sheng (1993) and CSY and instead computed it as the residual from value added and investment, 3) if we varied

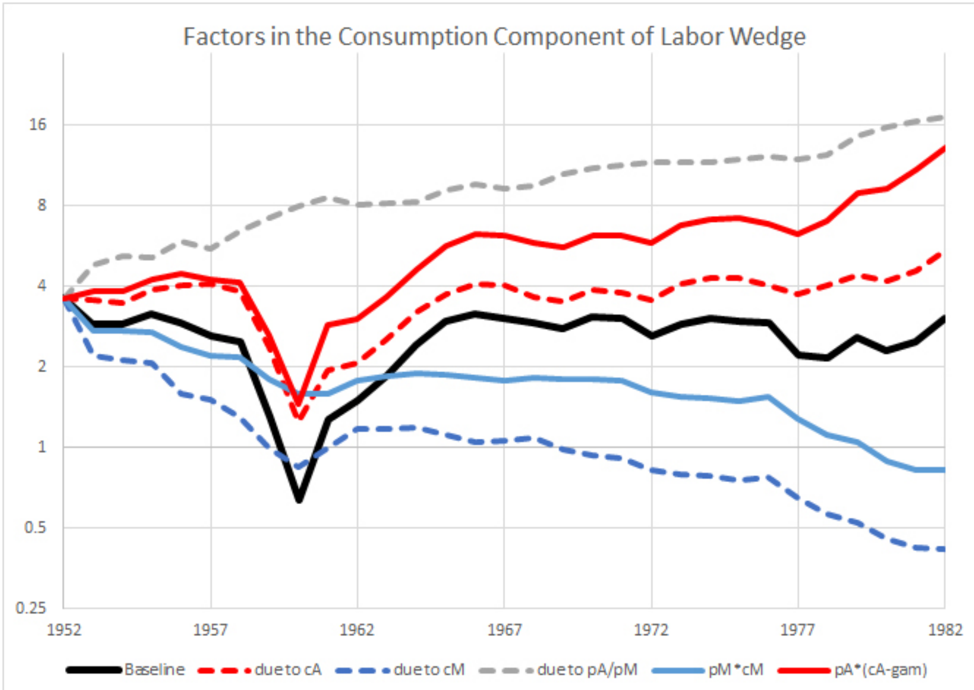

Figure 6: Factors in the Consumption Component of Labor Wedge

the subsistence level from its lowest value of zero to its highest possible value, implying that the economy reaches subsistence during the famine in 1960.

We find that the change in the prices series is barely noticeable. The change to the way in which consumption in manufacturing is computed as a residual from value added and investment - increases the wedge substantially during the first-five-year-plan, but has little effect in other periods. This initial bias was the reason we decided to use direct data on consumption, instead of computing it indirectly.

Finally, we find that even extreme changes in the subsistence level only lead to parallel shifts in the level of the consumption wedge but do not significantly alter its dynamics. In addition, if we relax the Cobb-Douglas assumption for preferences and instead assume a constant elasticity of substitution of $\sigma = 0.5$ we find that the fluctuations in the wedge are amplified noticeably, but the overall pattern of the change in the consumption wedge remains the same. Intuitively, when consumption goods are less substitutable, it takes a larger distortion to incentives to rationalize the same size of shift in relative consumption. Considering the fact that now an amplified wedge affects consumption in a muted way (as the demand elasticity is now lower),

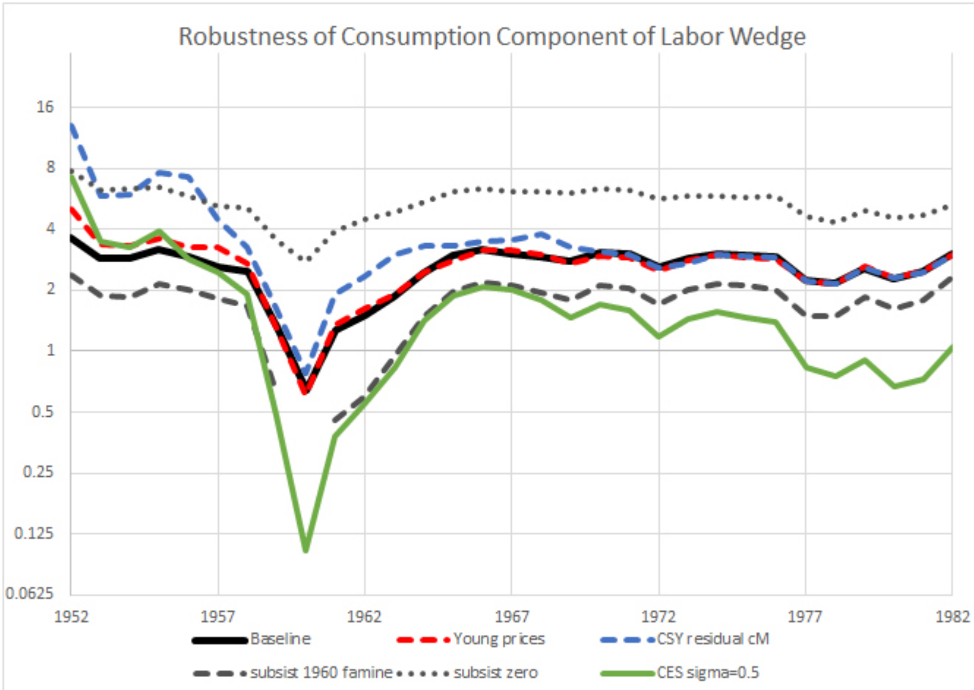

Figure 7: Alternative Series and the Consumption Wedge

the effects of changes in the wedge will be larger in this alternative calibration.

We also carried out sensitivity analysis with respect to alternative data with respect to consumption of both the agricultural and manufacturing goods from various sources, including Howe (1978), Sheng (1993a) and his source, the CSY (1989), and on investment from various sources including Chow (1993), Holz (2006) and various components from the various CSY. We found that all of these sources are consistent with one of two pictures, that is either our baseline if we use consumption data as the primary source (Howe, Sheng, CSY), or with our old series if investment is used as the primary source (Chow, Holz, CSY). However, as shown in Figure 8, some of the alternative consumption series that we considered also imply negative investment rates, which are implausible. Thus, we have chosen to use the manufacturing consumption data from the CSY as the primary source as it gives a more reliable data for the consumption wedge and at the same times implies plausible investment rates.

In Figure 9 we show three factors that comprise the production wedge: the variation due to change in agricultural marginal product of labor, the variation due to change in manufacturing marginal product of labor, and variation due to change in relative wages. It follows that nominal

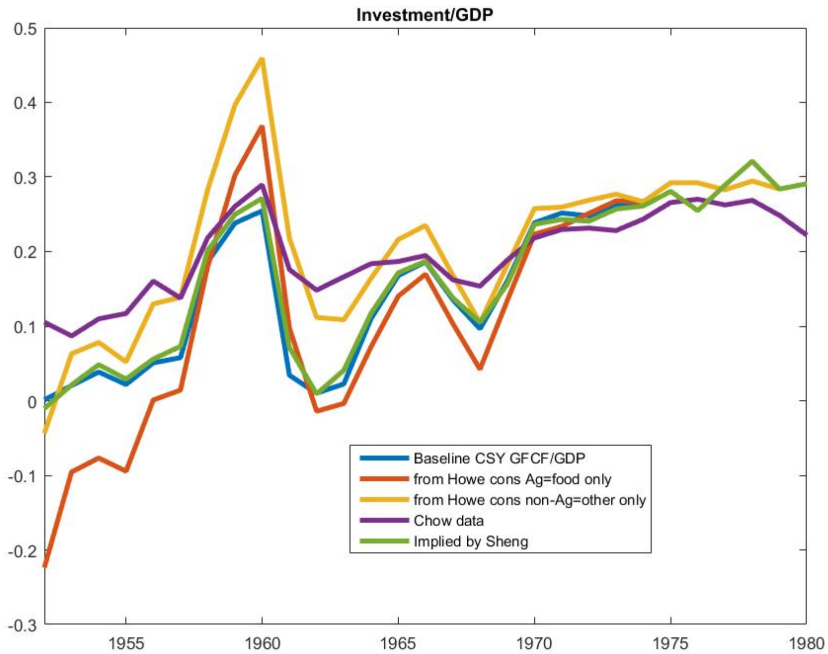

Figure 8: Investment to GDP ratio implied by various sources

productivity growth in the agricultural sector significantly reduces the production wedge over the course of the pre-reform period, while the growth in nominal non-agricultural consumption increases it. The change in the relative wages plays quantitatively a small role in the behavior of the production component. We can also compare the inverses of the shares of revenue going to labor income in each sector, which has the interpretation of a gross markup. We observe that the markups in both sector rise over the course of the pre-reform period.

Interestingly, during the periods of swings to the left, consistent with centralization, disincentives and overall disruptions to production, the government favored more the interests of the workers in the non-agricultural sector (a lower markup means higher wage bill and vice versa) and the production component of the wedge decreased. Examples of such policies included exceptional inefficiency of backyard furnaces, poor management of agriculture under the commune system, condemnations of managers who instituted incentives as class enemies during the Cultural Revolution. On the other hand, periods of swings to the right are associated with decentralization, focus on private incentives, and technocratic management of the economy, which all favor peasants in the agricultural sector (by lowering their markup, and

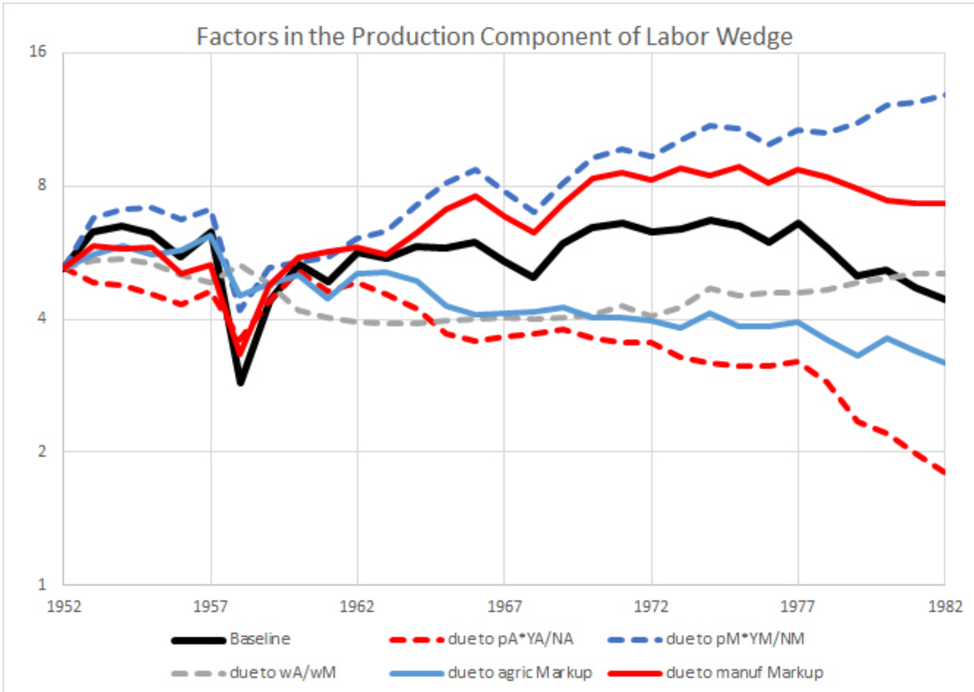

Figure 9: Factors and Alternative Series in the Production Wedge

hence increasing the share of the wage bill) and lead to an increased production component of the labor wedge. Thus, we think we have can argue that the political cycle and the related power struggle is the "institution" that drives the relative markups and hence the production component of the labor wedge.

In Figure 10 we show two factors that comprise the non-consumption component of the capital wedge: the variation due to change in agricultural marginal product of capital and the variation due to change in manufacturing marginal product of capital. It follows that nominal productivity growth in the agricultural sector is roughly flat over the whole period, while the growth in nominal non-agricultural productivity decreases the capital wedge. We also see what would have happened with the capital wedge we used Young prices (virtually nothing), and if we used Tang's value of farm capital for total agricultural capital - the increase in the wedge during the 1950s would have been larger, but the overall decline after that would have been similar to our baseline.

In Figure 11 we show two factors that comprise the investment wedge: the growth rate of per capita consumption and the return to capital in the non-agricultural sector. We find that

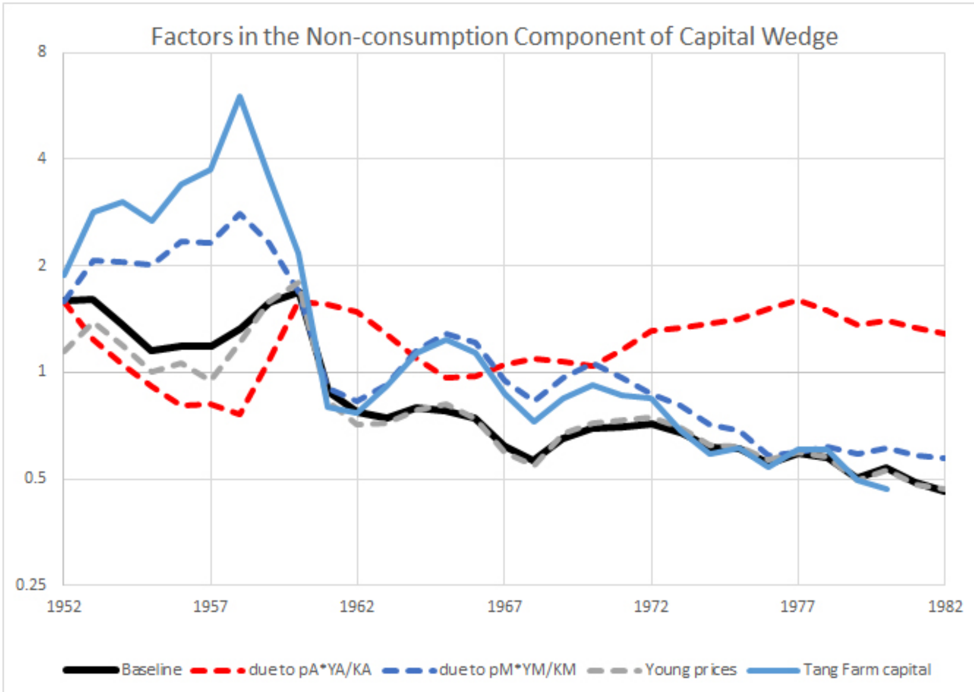

Figure 10: Factors and Alternative Series in the Capital Wedge

most of the short-run variations (noise) are explained by the erratic growth rate of consumption, while most of the overall downward trend in the wedge is explained by the reduction in the return to capital in the non-agricultural sector. We also construct the investment wedge using alternative capital series. First is if we took investment directly from the CSY and computed consumption as the residual, we would get much larger variations in the investment wedge, which still has an overall downward trend and a spike during the Great Leap Forward. The difference made by Tang's farm capital is a lot smaller in a similar exercise.

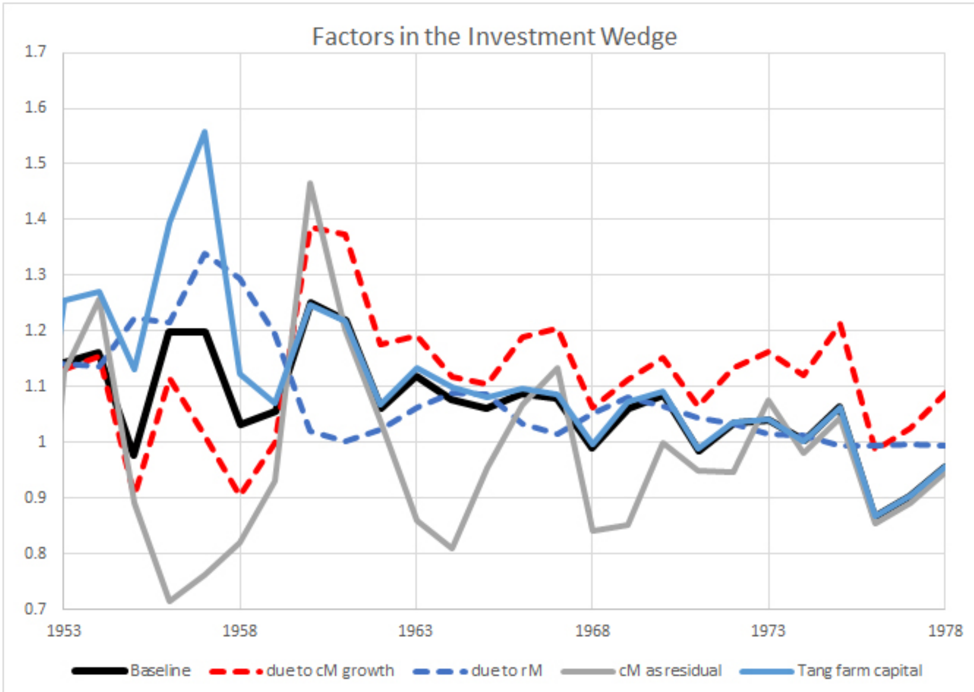

Figure 11: Factors and Alternative Series in the Investment Wedge

3 Direct Evidence

3.1 Model of the consumption component

Consider a simple static economy

$$\max u\left(c^{a}\right)+u\left(c^{m}\right)+k,$$

s.t.

$$p_a c_a + p_m c_m + k \leq W, [\lambda]$$

and

$$p_a c_a \leq p_a \bar{c}_a, [\lambda_a],$$

$$p_m c_m \leq p_m \bar{c}_m, [\lambda_m].$$

Here, k is the linear consumption good that can be thought of as either money or capital, p_a and p_m are the observed retail prices (set by the government) and $\bar{c}_a$,$\bar{c}_m$ are the set rations of each good.

The first-order conditions imply:

$$u'\left(c_a\right) = p_a\left(1+\lambda_a\right),$$

$$u'\left(c_m\right) = p_m\left(1+\lambda_m\right),$$

$$\lambda = 1.$$

Suppose we observe the price on the free market for agricultural goods p^a_{fm}. This price is the shadow cost of the rationing and thus is equal to $p^a_{fm} = p_a\left(1+\lambda_a\right)$. Then

$$u'\left(c_a\right) = p_a\left(1+\lambda_a\right) = p^a_{fm},$$

$$\frac{u'\left(c_a\right)}{p_a} = \frac{p^a_{fm}}{p_a}.$$

The consumption component is defined as

$$\frac{u'\left(c_m\right)/p_m}{u'\left(c_a\right)/p_a}.$$

We do not have information on the free markets of the manufacturing goods, but we do have the information on the price of the free markets of the agricultural goods (and on the ratio of the free market price to the state list price). Thus we can find what portion of the consumption component change can be accounted for by the change in

$$\frac{u'(c_a)}{p_a} = \frac{p_{fm}^a}{p_a}.$$

When $\frac{p_{fm}^a}{p_a}$ increases (the rationing of the agricultural goods becomes tighter), the consumption component of the wedge decreases (as the relative distortion of manufacturing goods decreases).

The data on the market price as a percentage of the list price for 1952-1961 is constructed by Sheng (1993b) and from 1962-1978 is from China Trade and Price Statistics (1989). For the year where both of the series overlap, 1961, we take the data from Sheng (1993b) for consistency. We briefly summatize the data. The ratio $\frac{p_{fm}^a}{p_a}$ is 1.32 in 1952, increases dramatically to 4.13 in 1961[3], falls to 1.36 in 1964 and rises to 1.69 in 1978. With regard to the quantity of the transactions on the free markets there are two soures of data. First, Zhang and Zhao (2000, Table 5) report purchase of agricultural products by user; we use the proportion sold to Non-Agricultural Domestic Consumers that excludes the goods sold to the State commercial, industrial, and other departments. The second source of data is the volume of transactions in pre-1978 free markets is Naughton (1986, Table E1, p. 233) for 1965 and 1974-1978.

In the Figure 4 in the main text we plot the consumption component and the consumption component implied by the free market price data. That is, the constructed consumption component is calculated as follows:

$$\tau_{fm}^c = \tau_t^c \frac{\frac{p_{fm,1952}^a}{p_{a,1952}}}{\frac{p_{fm,t}^a}{p_{a,t}}}.$$

We see that this constructed component of the consumption wedge essentially matches the consumption component that we calculated in the model both in terms of the behavior and the magnitudes across the whole 1953-1978 period. The constructed component slightly underestimates the magnitude of the fall of the consumption wedge during the most intense period of the Great Leap forward and identifies the trough in 1961 rather then in 1960.

The second method for providing evidence for the change in the degree of shorthages is using the data by Niu et al. (Table 7 in Zhang and Zhao 2000). They construct an estimate

[3]China Trade and Price Statistics (1989) gives the value of 3.20 for 1961.

by which the state purchasing price is below "real value" for agricultural products. Despite the fact that these estimates are based on the Marxist labor theory of value, still a broad comparison of the trends is still useful.[4] We convert these estimates to find the "real value" of agricultural goods as percentage of the list price that parallel the discussion above of the free market to the list prices. The "real value" is 1.196 in 1952, increases dramatically to 5.45 in 1961, falls to 1.68 in 1961 and rises to 2.43 in 1978. Then we construct the implied consumption component of the wedge. This constructed component of the wedge is virtually identical with our consumption component, and matches remarkably well the fall in the wedge during 1959-1960, then recovers earlier, in 1961, and then decreases gradually resulting in the wedge of 1.5 in 1978. Again, despite the differences in methodology, the pattern of changes in the constructed consumption component and model-based consumptiuon component as well as with the constructed consumption component from the free market prices is remarkable, as shown in the Figure 4 in the main text.

3.2 Data for direct evidence

In this section we report the data series used as direct evidence for the construction of proxies for components of the wedges, and the implied proxies. Table 29 shows direct evidence and proxies for the consumption component, Table 30 for the production component of labor wedge, Table 31 for the non-consumption component of capital wedge, Table 32 for the investment wedge. These data and the sources are discussed at length in Section 5.2 of main text and presented in Figure 4 there.

[4]See an extensive discussion of the Chinese estimates of the degree of underpricing of the agricultural goods ("the value scissors" as contrasted to the "price scissors" which measure the terms of trade between the sectors) in Sheng (1993a, Chapters 2 and 5).

Table 29: Direct evidence for consumption component of labor wedge

source	authors' computations			Niu et al. (1991)	Sheng (1993b)
year	Consumption wedge	Niu et. al. value	Free market vs list price wedge	State price below real value	Free market/State List Price
1952	3.38	3.07	2.77	16.4	139
1953	2.90	2.90	2.90	20.78	132.6
1954	3.02	2.87	2.93	21.79	131.5
1955	3.27	2.89	2.90	21.22	132.8
1956	2.98	2.78	3.00	24.29	128.6
1957	2.76	2.36	3.06	35.68	125.9
1958	2.63	2.70	2.90	26.47	133
1959	1.36	1.19	2.91	67.44	132.3
1960	0.67	0.67	2.63	81.68	146.7
1961	1.38	2.18	0.93	40.68	412.8
1962	1.52	2.30	1.43	37.26	270
1963	1.95	2.25	1.68	38.54	229
1964	2.48	2.06	2.83	43.71	136
1965	2.99	2.04	2.75	44.49	140
1966	3.17	1.87	2.73	49.02	141
1967	3.08	2.26	2.69	38.39	143
1968	3.01	2.47	2.69	32.65	143
1969	2.76	2.09	2.71	43.03	142
1970	3.07	1.72	2.71	53.15	142
1971	2.94	1.63	2.50	55.43	154
1972	2.55	1.59	2.31	56.6	167
1973	2.85	1.66	2.20	54.63	175
1974	2.98	1.82	2.18	50.43	177
1975	2.87	1.69	2.09	54.01	184
1976	2.61	1.90	2.03	48.27	190
1977	2.27	1.57	2.15	57.09	179
1978	2.32	1.51	2.28	58.87	169

Table 30: Direct evidence for production component of labor wedge

source:	Ash (2006), Table 3		Authors' computations			Imai (2000), Table 3	
year	Gross procurement	Rural grain supply	Procurement distortion	Production wedge	Terms of trade distortion	Obs	Zero tax
1952	33	139	5.85	5.22			
1953	47.46	130.95	4.89	6.31			
1954	51.81	137.94	4.79	6.50			
1955	50.75	147.76	5.04	6.22			
1956	45.44	164.05	5.55	5.55			
1957	48.04	161.18	5.39	6.28			
1958	58.76	155.93	4.78	2.88			
1959	67.41	122.11	3.44	4.39			
1960	51.05	112.96	4.21	5.32			
1961	40.47	110.7	4.87	4.87			
1962	38.15	128.69	5.40	5.64			
1963	43.97	139.37	5.26	5.51			
1964	47.43	155.65	5.34	5.83	5.83	66.6	94.9
1965	48.68	160.94	5.36	5.81	6.23	73.6	112.1
1966	51.58	175.76	5.42	5.95	6.36	76.8	119.4
1967	49.36	180.08	5.57	5.40	5.73	74.5	104.3
1968	48.7	171.19	5.49	4.98	5.34	76.7	100.1
1969	46.68	177.14	5.65	5.91	5.86	84.5	121.1
1970	54.44	197.94	5.57	6.44	6.33	89.1	137.8
1971	53.02	210.32	5.74	6.61	6.35	91.4	141.9
1972	48.3	206.56	5.88	6.32	5.94	93.1	135.2
1973	56.12	223.94	5.75	6.41	6.08	93.7	139.3
1974	58.07	231.3	5.75	6.68	6.06	93.4	138.3
1975	60.86	240.58	5.74	6.50	6.17	96.3	145.1
1976	58.25	245.59	5.86	5.97	5.75	98.5	138.5
1977	48	250	6.20	6.58	5.73	96.6	135.2
1978				5.79	5.54	100	135.4

Table 31: Direct evidence for non-consumption component of capital wedge

source	authors' calculations			Sheng (1993b), Table 6.4	Zhang Zhao (2000), Table 9	authors' calculations	
year	Non-cons. component	Infrastr. inv. in ag./ag. product	Implied wedge	value of capital construction	State ag. infrastructure inv.	Implied capital	Ag. product
1952	1.59	0.150	1.53	0.65	0.384	43.2	346.0
1953	1.61	0.166	1.33	0.79	0.577	41.6	381.4
1954	1.36	0.083	1.24	0.41	0.487	40.0	395.5
1955	1.15	0.117	1.11	0.62	0.571	38.6	424.8
1956	1.18	0.216	1.04	1.21	1.363	38.0	447.9
1957	1.18	0.234	1.05	1.27	1.093	37.2	433.9
1958	1.33	0.498	1.04	2.80	3.026	38.4	449.9
1959	1.57	0.750	1.25	3.63	2.991	39.4	387.2
1960	1.69	1.161	1.50	4.99	4.543	42.0	343.8
1961	0.88	0.320	1.13	1.78	1.235	41.2	445.1
1962	0.77	0.252	1.07	1.44	0.867	40.0	457.2
1963	0.74	0.370	0.97	2.32	1.848	39.8	502.0
1964	0.79	0.400	0.88	2.82	2.617	40.4	564.0
1965	0.78	0.295	0.76	2.42	2.351	40.8	656.9
1966	0.74	0.276	0.71	2.44	2.37	41.1	708.5
1967	0.62	0.256	0.70	2.31	2.208	41.3	720.6
1968	0.57	0.152	0.67	1.39	1.223	40.4	732.8
1969	0.65	0.215	0.66	2.00	1.792	40.2	742.8
1970	0.69	0.263	0.62	2.63	2.252	40.4	800.4
1971	0.70	0.308	0.61	3.21	3.327	41.7	833.7
1972	0.72	0.343	0.63	3.58	3.147	42.8	834.8
1973	0.68	0.351	0.59	4.02	3.748	44.4	915.6
1974	0.61	0.334	0.59	3.98	3.697	45.9	953.7
1975	0.61	0.343	0.59	4.20	3.556	47.1	979.8
1976	0.55	0.365	0.61	4.45	3.991	48.8	975.7
1977	0.59	0.377	0.64	4.48	3.598	49.9	950.6
1978	0.58	0.440	0.63	5.65	5.114	52.5	1027.5

Table 32: Direct evidence for investment wedge

source	authors' calculations			Naughton (1987a) Table III-2	
year	investment wedge	Naughton shortfall	Naughton money shift	shortfall	money shift
1953	1.14				
1954	1.21				
1955	0.95				
1956	1.20	1.13		2.56	
1957	1.23	0.98	1.00	-12.14	-1.78
1958	1.04	1.07	1.04	-2.91	-0.37
1959	1.09	1.02	1.11	-8.31	1.90
1960	1.19	1.19	1.19	9.21	4.79
1961	1.28	1.14	1.26	3.55	7.12
1962	1.02	1.03	1.06	-7.00	0.36
1963	1.12	1.07	1.04	-3.38	-0.28
1964	1.08	1.06	1.04	-3.57	-0.39
1965	1.06	1.06	1.10	-3.57	1.64
1966	1.09	1.06	1.14	-3.57	3.02
1967	1.08	1.13	1.14	2.94	2.88
1968	0.99	1.07	1.08	-2.66	0.99
1969	1.06	1.10	1.13	0.26	2.65
1970	1.08	1.02	1.04	-7.70	-0.50
1971	0.99	1.03	1.11	-6.98	2.03
1972	1.04	1.08	1.09	-2.06	1.24
1973	1.05	1.03	1.05	-7.11	0.16
1974	1.00	1.07	1.03	-3.01	-0.73
1975	1.06	1.07	1.06	-3.44	0.30
1976	0.87	1.11	1.11	0.77	1.97
1977	0.91	1.02	0.99	-7.70	-2.16
1978	0.96	1.01	1.05	-8.55	0.07

4 Theoretical Analysis

4.1 Full model

Here we describe the system of equations of the full dynamic model that is used in the benchmark calculations. We assume that agricultural exports are an exogenous fraction of agricultural output: $E_t^A = x_t Y_t^A$, and non-agricultural exports are linked to agricultural exports through an exogenous terms of trade factor: $q_t E_t^A + E_t^M = 0$. We also assume that defense spending is an exogenously given fraction of non-agricultural production: $G_t = g_t Y_t^{\mathrm{M}}$. Therefore, the resource constraints for agricultural and manufacturing goods are:

$$C_t^A N_t = (1 - x_t) Y_t^A, \tag{1}$$

$$C_t^M N_t + K_{t+1} = (1 - g_t) Y_t^M + q_t x_t Y_t^A + K_t (1 - \delta). \tag{2}$$

In the main version of the model we set the elasticity of substitution $\sigma = 1$, which implies logarithmic utility:

$$\sum_{t=0}^{\infty} \beta^t \left(\eta \ln \left(C_t^A - \gamma^A \right) + (1 - \eta) \ln C_t^M \right).$$

As an extension, we also consider a more general formulation

$$\sum_{t=0}^{\infty} \beta^t \left(\eta \frac{\left(C_t^A\right)^{1-\varepsilon_A}}{1 - \varepsilon_A} + (1 - \eta) \frac{\left(C_t^M\right)^{1-\varepsilon_M}}{1 - \varepsilon_M} \right),$$

which captures the elasticities of demand with respect to both goods as parameters. In our benchmark setup of preferences, $\varepsilon_M = 1$ and $\varepsilon_{A,t} = \frac{C_t^A}{C_t^A - \gamma^A}$. Both preference parameters ε_A and ε_M can be conveniently scaled by dividing by σ to capture imperfect substitution between agricultural and manufacturing goods.

We denote τ_t^C the consumption component of the labor wedge, τ_t^P the production component of the labor wedge, τ_t^M the mobility component of the labor wedge, τ_t^R the non-consumption component of the capital wedge. Thus the labor wedge is $\tau_{W,t} = \tau_t^C \tau_t^P \tau_t^M$ and the capital wedge is $\tau_{R,t} = \tau_t^C \tau_t^R$. The wedges are defined in "gross" terms (i.e. in the absence of distortion the respective wedge or the component of the wedge equals 1). Therefore, the first-order condition of consumers is:

$$\eta \frac{1}{C_t^A - \gamma^A} \tau_t^C = (1-\eta) \frac{p_{A,t}}{p_{M,t}} \frac{1}{C_t^M}. \tag{3}$$

For ease of notation, we redefine production shares as $\alpha_{K,i} = \alpha_i$, $\alpha_{N,i} = \beta_i$. Then, the production functions are given by:

$$Y_t^M = X_t^M \left(K_t^M\right)^{\alpha_M} \left(N_t^M\right)^{\beta_M}, \tag{4}$$

$$Y_t^A = X_t^A \left(K_t^A\right)^{\alpha_A} \left(N_t^A\right)^{\beta_A}. \tag{5}$$

The Euler equation of consumers is:

$$\frac{1}{C_t^M} \tau_{K,t} = \beta \frac{1}{C_{t+1}^M} \left(\alpha_M \frac{Y_{t+1}^M}{K_{t+1}^M} + 1 - \delta \right). \tag{6}$$

The distortion of wage and rental rates due to non-free movement of capital and labor gives:

$$\beta_M \frac{Y_t^M}{N_t^M} = \beta_A \frac{Y_t^A}{N_t^A} p_t \tau_t^P \tau_t^M, \tag{7}$$

$$\alpha_M \frac{Y_t^M}{K_t^M} = \alpha_A \frac{Y_t^A}{K_t^A} \frac{p_{A,t}}{p_{M,t}} \tau_t^R. \tag{8}$$

We consider population N_t and labor force $\chi_t N_t$ as separate exogenous factors for ease of notation. The resource constraints for capital and labor are:

$$N_t^A + N_t^M = \chi_t N_t \tag{9}$$

$$K_t^A + K_t^M = K_t \tag{10}$$

The list of endogenous variables is: $S_t = \left\{Y_t^M, Y_t^A, N_t^M, N_t^A, K_t^M, K_t^A, C_t^M, C_t^A, p_{A,t}/p_{M,t}, K_t\right\}$. The list of exogenous variables is: $E_t = \left\{X_t^M, X_t^A, \tau_t^C, \tau_t^P, \tau_t^M, \tau_t^R, \tau_{K,t}, N_t, \chi_t, g_t, x_t, q_t\right\}$. The parameters are production elasticities $\{\alpha_A, \alpha_M, \beta_A, \beta_M\}$, consumption preferences $\left\{\eta, \gamma^A\right\}$ (in the extended model $\{\eta, \varepsilon_A, \varepsilon_M\}$), as well as other discounting and depreciation rates $\{\beta, \delta\}$. Given parameters, and data on the endogenous variables, the equations are easily inverted to obtain paths of the exogenous variables. Then the full dynamic model takes as given parameters and exogenous variables and solves for endogenous variables in T periods. The full dynamic system has $10T-1$ equations in $10T-1$ unknowns given the initial and terminal conditions on the capital stock, K_0 and K_{T+1}. This system has a unique solution which we compute using a nonlinear solver (fsolve).

We define the *elasticity of the labor share* (or GDP) *in period* $t+\Delta$ *with respect to TFP* (or a wedge) *in period* t as the percentage change in the labor share in period $t+\Delta$ in response to a 1 percent positive deviation of TFP in period t from its value in the data, when all the other values of TFP and wedges equal those in the data. We define the *contemporaneous elasticity* as the elasticity of the labor share to TFP in the same period, $\Delta = 0$. We call elasticities for all cases $\Delta \neq 0$ *cross-elasticities*. We define the *integral elasticity of labor share to TFP in period* t as the sum of the contemporaneous elasticity and all the cross-elasticities of labor share to TFP in period t. Conceptually, the integral elasticity measures the effect of a permanent increase in TFP from period t onward - on the change in the labor share from period 0 to T (1953-78 in our case). In the the following subsections we build intuition by analyzing a sequence of models, starting from the most simple static model and all the way to the dynamic model. The goal is to derive expressions for how parameters affect contemporaneous elasticities and cross elasticities of labor share and GDP. In the following section, we describe the empirical behavior of the elasticities for the full model, and the decomposition results.

4.2 Linearized full model

In this section, we linearize all the ten equations of the dynamic system (1)-(10) around the initial point (subscript 0):

$$d\ln C_t^A - d\ln Y_t^A = +\frac{-x_0}{1-x_0} d\ln x_t - d\ln N_t, \tag{11}$$

$$\begin{aligned} d\ln C_t^M = {} & \frac{Y_0^M - G_M^0}{C_0^M} d\ln Y_t^M + \frac{EX_M^0}{C_0^M} d\ln Y_t^A - \frac{K_1}{C_0^M} d\ln K_{t+1} + \frac{K_0(1-\delta)}{C_0^M} d\ln K_t + \\ & + \frac{-G_M^0}{C_0^M} d\ln g_t + \frac{EX_M^0}{C_0^M} d\ln q_t + \frac{EX_M^0}{C_0^M} d\ln x_t - d\ln N_t, \end{aligned} \tag{12}$$

$$-\varepsilon_A d\ln C_t^A + d\ln C_t^M - d\ln \frac{p_{A,t}}{p_{M,t}} = -d\ln \tau_t^C, \tag{13}$$

$$d\ln Y_t^M - \alpha_M d\ln K_t^M - \beta_M d\ln N_t^M = d\ln X_t^M, \tag{14}$$

$$d\ln Y_t^A - \alpha_A d\ln K_t^A - \beta_A d\ln N_t^A = d\ln X_t^A, \tag{15}$$

$$d\ln C_{t+1}^M + d\ln \tau_{K,t} = d\ln C_t^M + \frac{r^M}{r^M+1-\delta}\left(d\ln Y_{t+1}^M - d\ln K_{t+1}^M\right), \tag{16}$$

$$d\ln Y_t^M - d\ln N_t^M - d\ln Y_t^A + d\ln N_t^A - d\ln\frac{p_{A,t}}{p_{M,t}} \quad = \quad d\ln\tau_t^P\tau_t^M, \tag{17}$$

$$d\ln Y_t^M - d\ln K_t^M - d\ln Y_t^A + d\ln K_t^A - d\ln\frac{p_{A,t}}{p_{M,t}} \quad = \quad d\ln\tau_t^R, \tag{18}$$

$$\frac{N_0^A}{N_0}d\ln N_t^A + \frac{N_0^M}{N_0}d\ln N_t^M \quad = d\ln\chi_t + \quad d\ln N_t, \tag{19}$$

$$\frac{K_0^A}{K_0}d\ln K_t^A + \frac{K_0^M}{K_0}d\ln K_t^M \quad = \quad d\ln K_t. \tag{20}$$

Here $\varepsilon_A = \frac{C_0^A}{C_0^A - \gamma^A}$ and $r^M = \alpha_M\frac{Y_1^M}{K_1^M}$.

First, we solve the linearized dynamic model in stacked matrix form. The equations are repeated for all periods and then stacked together in one big matrix as $AS_t = BE_t$. This large system is a linear system of T*10-1 equations in T*10-1 unknowns which has a unique solution is found by simply inverting the matrix A thus obtaining $S_t = \left(A^{-1}B\right)E_t$.

Alternatively, note that the eight equations (11), (13)-(15), (17)-(20) form the static subsystem, which takes as given manufacturing consumption and capital, and is solved contingent on them. We shall write the static subsystem of these eight equations in each period in matrix form and solve it taking as given manufacturing consumption and capital in the same period. The remaining system of two dynamic equations (12), (16) with respect to capital and consumption for each period can be recursively substituted into each other to obtain a system of quadratic lag equations with respect to capital stock. This becomes a linear second order ordinary differential equation with boundary conditions. We provide the closed form solution in Section 4.7.

4.3 Static model

In this section we consider a model where we take the investment rate s_t and capital K_t as exogenous and augment the static subsystem with another static equation. Then the Euler equation disappears, and the resource constraint on manufacturing goods (2) becomes

$$C_t^M N_t = (1 - g_t - s_t)\,Y^M + q_t x_t Y_t^A. \tag{21}$$

A linearized version of this constraint is:

$$d\ln C_t^M \quad = \quad \frac{Y_0^M - G_M^0 - s_0K_0}{C_0^M}d\ln Y_t^M + \frac{EX_M^0}{C_0^M}d\ln Y_t^A + \frac{-s_0K_0}{C_0^M}d\ln s_t +$$

$$+\frac{-G_M^0}{C_0^M}d\ln g_t+\frac{EX_M^0}{C_0^M}d\ln q_t+\frac{EX_M^0}{C_0^M}d\ln x_t-d\ln N_t. \tag{22}$$

The linearized static system $AS_t = BE_t$ has a simple solution $S_t = A^{-1}BE_t$ since matrix A is invertible. The matrix $A^{-1}B$ captures contemporaneous impulse responses of endogenous variables to exogenous variables as well as to contemporaneous levels of investment rate s_t and capital K_t. If those are treated as exogenously given (and are consistent with the solution of the full model), the static model replicates the data.

4.4 Simple model

The full dynamic model could be simplified to capture contemporaneous effects of consumption smoothing by taking the path of capital semi-exogenously as follows.

The resource constraint for manufacturing goods is now:

$$C_t^M N_t + K_{t+1} = (1-g_t)\,Y_t^M + q_t x_t Y_t^A + K_t\,(1-\delta) + X_t^M \mathit{\Omega}_t^M \left(K_t - \bar{K}_t\right). \tag{23}$$

The Euler equation of consumers:

$$\left(c_t^M\right)^{-\varepsilon_M}\tau_t^K = \beta\left(c_{t+1}^M\right)^{-\varepsilon_M}\left(X_{t+1}^M\Omega_{t+1}^M + 1 - \delta\right). \tag{24}$$

The resource constraint for capital is:

$$K_t^A + K_t^M = \bar{K}_t, \tag{25}$$

where $\Omega_t^M = \alpha_M\left(K_t^M\right)^{\alpha_M-1}\left(N_t^M\right)^{\beta_M}$ and $\bar{K}_t$ are given exogenously. The model matches exactly any path of the full model given appropriate P_t^M and $\bar{K}_t$.

The advantage of this model is the fact that contemporaneous elasticities of responses to shocks can be derived analytically in closed form as we show next. It makes transparent the consumption smoothing motive of agents and captures quantitatively well the behavior of contemporaneous elasticities to all wedges except the investment wedge. We analyze this model extensively in section 4.9 of this appendix.

4.5 Solution of the linearized static model without capital

Let us derive the effects of wedges and TFPs on the labor share. First consider a model without capital. We rewrite the system of equations here for convenience. In order to emphasize the role of unitary elasticities of consumption, we consider a general setting where ε_A and ε_M may differ from 1.

The first-order condition of consumers captures consumers' relative demand:

$$\frac{\eta\left(c^A\right)^{-\varepsilon_A}}{(1-\eta)\left(c^M\right)^{-\varepsilon_M}}=\frac{1}{\tau^C}\frac{p^A}{p^M}. \tag{26}$$

Production functions:

$$Y^A=X^A\left(N^A\right)^{\beta_A}, \tag{27}$$

$$Y^M=X^M\left(N^M\right)^{\beta_M}. \tag{28}$$

Wages equal marginal products of labor:

$$\tau^P p^A\beta_A\frac{Y^A}{N^A}=w^A, \tag{29}$$

$$p^M\beta_M\frac{Y^M}{N^M}=w^M. \tag{30}$$

Resource constraint on labor:

$$N^A+N^M=\chi N. \tag{31}$$

There is a mobility wedge between manufacturing and agricultural wages:

$$\tau^M w^A=w^M. \tag{32}$$

Demand for goods equals supply:

$$Y^A=C^A, \tag{33}$$

$$Y^M=C^M. \tag{34}$$

These equations imply the relative behavior of labor inputs:

$$\frac{\left(N^A\right)^{1-\beta_A(1-\varepsilon_A)}}{\left(N^M\right)^{1-\beta_M(1-\varepsilon_M)}} = \frac{\eta\beta_A}{(1-\eta)\beta_M}\tau^M\tau^P\tau^C\frac{\left(X^A\right)^{1-\varepsilon_A}}{\left(X^M\right)^{1-\varepsilon_M}}. \tag{35}$$

In a linearized form, the general expression implies:

$$\begin{aligned}(1-\beta_A(1-\varepsilon_A))\,d\ln N^A-(1-\beta_M(1-\varepsilon_M))\,d\ln N^M &= \\ d\ln\tau^M+d\ln\tau^P+d\ln\tau^C+(1-\varepsilon_A)\,d\ln X^A-(1-\varepsilon_M)\,d\ln X^M.\end{aligned} \tag{36}$$

Linearizing the resource constraint for labor we obtain:

$$\zeta_A d\ln N^A+\zeta_M d\ln N^M = 0. \tag{37}$$

where $\zeta_A=\frac{N^A}{\chi N}$ and $\zeta_M=\frac{N^M}{\chi N}$.

Solving the system of two equations (36)-(37), we find:

$$d\ln N^A=\zeta_M\frac{d\ln\tau^M+d\ln\tau^P+d\ln\tau^C+(1-\varepsilon_A)d\ln X^A-(1-\varepsilon_M)d\ln X^M}{\zeta_M(1-\beta_A(1-\varepsilon_A))+(1-\beta_M(1-\varepsilon_M))\zeta_A},$$

$$d\ln N^M = -\zeta_A \frac{d\ln\tau^M + d\ln\tau^P + d\ln\tau^C + (1-\varepsilon_A) d\ln X^A - (1-\varepsilon_M) d\ln X^M}{(1-\beta_A(1-\varepsilon_A))\zeta_M + (1-\beta_M(1-\varepsilon_M))\zeta_A},$$

$$d\ln N^A - d\ln N^M = \frac{d\ln\tau^M + d\ln\tau^P + d\ln\tau^C + (1-\varepsilon_A) d\ln X^A - (1-\varepsilon_M) d\ln X^M}{1-\beta_A(1-\varepsilon_A)\zeta_M - \beta_M(1-\varepsilon_M)\zeta_A}.$$

Therefore,

$$\left(\frac{N^A}{N^M}\right)^{1-\beta_A(1-\varepsilon_A)\zeta_M - \beta_M(1-\varepsilon_M)\zeta_A} \propto \tau^M \tau^P \tau^C \frac{\left(X^A\right)^{1-\varepsilon_A}}{\left(X^M\right)^{1-\varepsilon_M}}.$$

In the simple case of homothetic Cobb-Douglas utility, the elasticity of the labor ratio to all three wedges equals one. The elasticity with respect to productivity equals zero. Indeed, when $\varepsilon_A = \varepsilon_M = 1$, the equation (35) implies:

$$\frac{N^A}{N^M} = \frac{\eta\beta_A}{(1-\eta)\beta_M} \tau^M \tau^P \tau^C.$$

When demand is non-homothetic, then relative demands have additional effects on the prices which dampens the response of the labor ratio to wedges and produces a reaction to changes in TFP.

We can also derive the effects on GDP by substituting the expressions for labor into production functions:

$$d\ln\left(Y^M + Y^A\right) = m d\ln Y^M + (1-m)\, d\ln Y^A =$$

$$= \frac{\beta_A\zeta_M - \beta_M\zeta_A}{1-\zeta_M\beta_A(1-\varepsilon_A) - \zeta_A\beta_M(1-\varepsilon_M)} \left(d\ln\tau^M + d\ln\tau^P + d\ln\tau^C\right) +$$

$$+ \frac{\beta_A\zeta_M - \beta_M\zeta_A}{1-\zeta_M\beta_A(1-\varepsilon_A) - \zeta_A\beta_M(1-\varepsilon_M)} \left((1-\varepsilon_A)\, d\ln X^A - (1-\varepsilon_M)\, d\ln X^M\right) + m d\ln X^M + (1-m)\, d\ln X^A.$$

Here $m = \frac{Y^M}{Y^M + Y^A}$.

The elasticity with respect to wedges is $\frac{\beta_A\zeta_M - \beta_M\zeta_A}{1-\zeta_M\beta_A(1-\varepsilon_A) - \zeta_A\beta_M(1-\varepsilon_M)}$.

This is the indirect effect through reallocation to the "more productive" sector.

If $\beta_M > \beta_A$ and $\zeta_A > \zeta_M$ then this elasticity is negative, that is, increase in wedges slows down growth through this indirect effect. Lowering wedges, speeds up growth. But in principle this effect could have the opposite sign.

The elasticity with respect to manufacturing TFP is

$$m - \frac{\beta_A\zeta_M - \beta_M\zeta_A}{1-\zeta_M\beta_A(1-\varepsilon_A) - \zeta_A\beta_M(1-\varepsilon_M)} (1-\varepsilon_M).$$

The elasticity with respect to agricultural TFP is

$$1 - m + \frac{\beta_A \zeta_M - \beta_M \zeta_A}{1-\zeta_M \beta_A (1-\varepsilon_A) - \zeta_A \beta_M (1-\varepsilon_M)} (1 - \varepsilon_A).$$

In both of these cases, the first term is the direct effect of productivity on sectoral output. The second term works through reallocation of labor due to productivity differential. This term could work together with TFP or in the opposite direction, depending on the signs of elasticities. In our specific case, $\varepsilon_M = 1, \varepsilon_A > 1$, so the first indirect effect is zero, the second is positive (due the non-homotheticity driven by the subsistence constraint). And the direct effect is always positive as well.

4.6 Solution of the linearized static model with capital

The result from the previous section can be generalized to include the effects of capital. Let us replace the equations (27)-(28) above with the production functions that include capital as a factor of production:

$$Y^A = X^A \left(K^A\right)^{\alpha_A} \left(N^A\right)^{\beta_A}, \tag{38}$$

$$Y^M = X^M \left(K^M\right)^{\alpha_A} \left(N^M\right)^{\beta_M}. \tag{39}$$

In addition, let us introduce the non-consumption component of the intersectoral capital wedge that may result in a difference between the marginal products of capital across sectors:

$$\tau^R = \frac{p_A \alpha_A \frac{Y^A}{K^A}}{p_M \alpha_A \frac{Y^M}{K^M}} \tag{40}$$

Finally, let us assume that capital is in fixed supply:

$$K^A + K^M = K. \tag{41}$$

The resulting system of equations immediately implices the following relationship between capital and labor ratios:

$$\frac{K^A}{K^M} = \frac{\beta_M}{\beta_A} \frac{\alpha_A}{\alpha_M} \frac{\tau^R}{\tau^M \tau^P} \frac{N^A}{N^M}.$$

Therefore, capital input is proportionally related to labor input and can be substituted out as well:

$$\frac{K^M}{K} = \frac{\frac{N^M}{N}}{\frac{\beta_M}{\beta_A} \frac{\alpha_A}{\alpha_M} \frac{\tau^R}{\tau^M \tau^P} + \left(1 - \frac{\beta_M}{\beta_A} \frac{\alpha_A}{\alpha_M} \frac{\tau^R}{\tau^M \tau^P}\right) \frac{N^M}{N}} \tag{42}$$

,

$$\frac{K^A}{K} = \frac{\frac{\beta_M}{\beta_A}\frac{\alpha_A}{\alpha_M}\frac{\tau^R}{\tau^M\tau^P}\left(1-\frac{N^M}{N}\right)}{\frac{\beta_M}{\beta_A}\frac{\alpha_A}{\alpha_M}\frac{\tau^R}{\tau^M\tau^P}+\left(1-\frac{\beta_M}{\beta_A}\frac{\alpha_A}{\alpha_M}\frac{\tau^R}{\tau^M\tau^P}\right)\frac{N^M}{N}} \tag{43}$$

.

Next, we substitute relative prices to obtain the relationship similar to (35) in the model without capital:

$$\frac{N^A}{N^M}\frac{\left(Y^M\right)^{1-\varepsilon_M}}{\left(Y^A\right)^{1-\varepsilon_A}} = \frac{\eta}{(1-\eta)}\frac{\beta_A}{\beta_M}\tau^M\tau^P\tau^C.$$

Now we can substitute sectoral production functions (38) and (39):

$$\frac{N^A}{N^M}\frac{\left(X^M\left(K^M\right)^{\alpha_M}\left(N^M\right)^{\beta_M}\right)^{1-\varepsilon_M}}{\left(X^A(K^A)^{\alpha_A}(N^A)^{\beta_A}\right)^{1-\varepsilon_A}} = \frac{\eta}{(1-\eta)}\frac{\beta_A}{\beta_M}\tau^M\tau^P\tau^C.$$

The last step is to substitute capital from (42)-(43) and collect terms:

$$\frac{\left(\frac{N^A}{N}\right)^{1-(\alpha_A+\beta_A)(1-\varepsilon_A)}}{\left(\frac{N^M}{N}\right)^{1-(\alpha_M+\beta_M)(1-\varepsilon_M)}}\left(\frac{\beta_M}{\beta_A}\frac{\alpha_A}{\alpha_M}\frac{\tau^R}{\tau^M\tau^P}\frac{N^A}{N}+\frac{N^M}{N}\right)^{\alpha_A(1-\varepsilon_A)-\alpha_M(1-\varepsilon_M)} =$$
$$\frac{\eta}{(1-\eta)}\frac{\beta_A}{\beta_M}\tau^M\tau^P\tau^C\frac{\left(X^AK^{\alpha_A}N^{\beta_A}\right)^{1-\varepsilon_A}}{\left(X^MK^{\alpha_M}N^{\beta_M}\right)^{1-\varepsilon_M}}\left(\frac{\beta_M}{\beta_A}\frac{\alpha_A}{\alpha_M}\frac{\tau^R}{\tau^M\tau^P}\right)^{\alpha_A(1-\varepsilon_A)}.$$

The linearized version of this equation can be combined this with the linearized version of the resource constraint on labor and solved for linearized labor inputs. This gives a linearized solution for the labor ratio which we can revert back to the non-linearized form to obtain:

$$\left(\frac{N^A}{N^M}\right)^{1-\lambda-\mu} \propto \tau^C\left(\tau^M\tau^P\right)^{1-\lambda}\left(\tau^R\right)^{\lambda}\frac{\left(X^A\right)^{1-\varepsilon_A}}{\left(X^M\right)^{1-\varepsilon_M}}\frac{\left(K^{\alpha_A}N^{\beta_A}\right)^{1-\varepsilon_A}}{\left(K^{\alpha_M}N^{\beta_M}\right)^{1-\varepsilon_M}},$$

where $\lambda = \frac{K^M}{K}\alpha_A\left(1-\varepsilon_A\right)+\frac{K^A}{K}\alpha_M\left(1-\varepsilon_M\right)$ and $\mu = \frac{N^M}{N}\beta_A\left(1-\varepsilon_A\right)+\frac{N^A}{N}\beta_M\left(1-\varepsilon_M\right).$

The elasticity of labor ratio to the consumption component is: $\frac{1}{1-\lambda-\mu}$.

The elasticity of labor ratio to the production and mobility components of the labor wedge are: $\frac{1-\lambda}{1-\lambda-\mu}$.

The elasticity of labor ratio to the non-consumption component of the capital wedge is: $\frac{\lambda}{1-\lambda-\mu}$.

The elasticity of labor ratio to agricultural productivity is: $\frac{1-\varepsilon_A}{1-\lambda-\mu}$.

The elasticity of labor ratio to manufacturing productivity is: $-\frac{1-\varepsilon_M}{1-\lambda-\mu}$.

When either of the demand parameters, ε_M or ε_A, equals 1, the effects of corresponding TFP vanish. When both equal 1, three components of the labor wedge translate one-for-one into the labor ratio, while TFP and capital wedge play no role:

$$\frac{N^A}{N^M} = \frac{\eta}{(1-\eta)} \frac{\beta_A}{\beta_M} \tau^M \tau^P \tau^C.$$

Both the general and the simplified cases yield results that are symmetric between sectors. However, in the model non-homotheticity is only in one sector, due to subsistence for food, the manufacturing demand parameter equals 1, so the effect of manufacturing TFP disappears, and $1-\lambda-\mu = 1-\frac{K^M}{K}\alpha_A(1-\varepsilon_A)-\frac{N^M}{N}\beta_A(1-\varepsilon_A)$ depends only on the spillover from demand for agricultural goods on prices. Similarly, the effects of components of capital and labor wedges depend only on the agricultural component of $\lambda = \frac{K^M}{K}\alpha_A(1-\varepsilon_A)$:

$$\left(\frac{N^A}{N^M}\right)^{1-\lambda-\mu} \propto \left(\tau^C \tau^M \tau^P\right)\left(\frac{\tau^R}{\tau^M \tau^P}\right)^{\lambda} \left(X^A\right)^{1-\varepsilon_A} \left(K^{\alpha_A} N^{\beta_A}\right)^{1-\varepsilon_A}.$$

The non-homotheticity plays a role through the dampening effect of demand for agricultural goods on the agricultural price. In addition to the direct effect of labor reallocation on relative demands, there is also the effect of capital reallocation which is proportional to labor reallocation and goes in the same direction.

To compute the effect on GDP, we need to take the expression for labor inputs, substitute to compute changes in capital inputs, and then substitute both capital and labor into the production functions. Denote the shift in labor across sectors by $d\ln\frac{N^A}{N^M}$ as computed earlier. Substituting labor inputs, capital inputs into the sectoral production functions and combining the two we get that the change in GDP equals:

$$d\ln GDP = m d\ln Y^M + (1-m)\, d\ln Y^A =$$

$$=$$

$$m d\ln X^M + (1-m)\, d\ln X^A + \left((1-m)\left(\alpha_A \frac{K^M}{K} + \beta_A \frac{N^M}{N}\right) - m\left(\alpha_M \frac{K^A}{K} + \beta_M \frac{N^A}{N}\right)\right) d\ln\frac{N^A}{N^M} + \left((1-m)\,\alpha_A \frac{K^M}{K} - m\alpha_M \frac{K^A}{K}\right) d\ln\frac{\tau^R}{\tau^M \tau^P}.$$

The first two terms represent the direct effects of TFP. The third term represents the effect on GDP from increased efficiency due to reallocation of labor and hence capital. The fourth term represents the direct effect of capital reallocation due to change in wedges that affect capital reallocation directly.

4.7 Solution of the linearized dynamic model

We now consider the solution of the linearized dynamic model. The full system of linear equations is given by (11)-(20). As discussed in the subsection 4.2, these ten equation can be divided into the eight equations (11), (13)-(15), (17)-(20) that form the static subsystem, which takes as given manufacturing consumption and capital, and is solved contingent on them — and the two dynamic equations (12), (16) that determine the evolution of manufacturing consumption and capital over time.

Therefore, we shall treat c_t^M and K_t as exogenous from the point of view of the static subsystem of these eight equations. Denote vectors of exogenous, quasi-exogenous (capital and manufacturing consumption) and endogenous variables:

$$Z_t = \begin{bmatrix} d\ln X_t^M \\ d\ln X_t^A \\ d\ln \tau_t^C \\ d\ln \tau_t^P \\ d\ln \tau_t^M \\ d\ln \tau_t^R \\ d\ln \tau_{K,t} \\ d\ln \chi_t N_t \\ d\ln N_t \\ d\ln g_t \\ d\ln x_t \\ d\ln q_t \\ d\ln K_t \\ d\ln C_t^M \end{bmatrix}, \qquad S_t = \begin{bmatrix} d\ln Y_t^M \\ d\ln Y_t^A \\ d\ln N_t^M \\ d\ln N_t^A \\ d\ln K_t^M \\ d\ln K_t^A \\ d\ln C_t^A \\ d\ln \frac{p_{A,t}}{p_{M,t}} \end{bmatrix}.$$

Using this notation, we can write the first 8 equations in matrix form:

$$A * S_t = B * Z_t,$$

where

$$A * S_t = \begin{bmatrix} 0 & -1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \varepsilon_A & 1 \\ 1 & 0 & -\beta_M & 0 & -\alpha_M & 0 & 0 & 0 \\ 0 & 1 & 0 & -\beta_A & 0 & -\alpha_A & 0 & 0 \\ 1 & -1 & -1 & 1 & 0 & 0 & 0 & -1 \\ 1 & -1 & 0 & 0 & -1 & 1 & 0 & -1 \\ 0 & 0 & \frac{N_0^M}{N_0} & \frac{N_0^A}{N_0} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{K_0^M}{K_0} & \frac{K_0^A}{K_0} & 0 & 0 \end{bmatrix} \begin{bmatrix} d\ln Y_t^M \\ d\ln Y_t^A \\ d\ln N_t^M \\ d\ln N_t^A \\ d\ln K_t^M \\ d\ln K_t^A \\ d\ln c_t^A \\ d\ln p_t \end{bmatrix},$$

$$
B * Z_t = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -1 & 0 & \frac{-x_0}{1-x_0} & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 \end{bmatrix} \begin{bmatrix} d\ln X_t^M \\ d\ln X_t^A \\ d\ln \tau_t^C \\ d\ln \tau_t^P \\ d\ln \tau_t^M \\ d\ln \tau_t^R \\ d\ln \tau_t^K \\ d\ln \chi_t N_t \\ d\ln N_t \\ d\ln g_t \\ d\ln x_t \\ d\ln q_t \\ d\ln K_t \\ d\ln C_t^M \end{bmatrix}.
$$

This is a quadratic system and we can invert it analytically to compute the response of endogenous variables in period t to shocks, consumption and capital:

$$
S_t = A^{-1} B Z_t = D * Z_t.
$$

For the dynamic model we shall use the fact that each endogenous variable can be written in the form:

$$
d\ln S_t^i = \Sigma_{s=1}^{12} D_{(i,s)} Z_t^s + D_{(i,13)} d\ln K_t + D_{(i,14)} d\ln c_t^M
$$

To reduce notation, we shall carry the first terms, which are just responses to exogenous variables, in reduced form as $D_{(i,\cdot)} Z_t$. In particular, we shall use the following 3 variables in the dynamic model:

$$
d\ln Y_t^M = D^0_{(1,\cdot)} Z_t + D^0_{(1,13)} d\ln K_t + D^0_{(1,14)} d\ln C_t^M
$$

$$
d\ln Y_t^A = D^0_{(2,\cdot)} Z_t + D^0_{(2,13)} d\ln K_t + D^0_{(2,14)} d\ln C_t^M
$$

$$
d\ln K_t^M = D^0_{(5,\cdot)} Z_t + D^0_{(5,13)} d\ln K_t + D^0_{(5,14)} d\ln C_t^M
$$

Now we need to solve the remaining system:

$$
d\ln C_{t+1}^M = d\ln C_t^M + d\ln \tau_t^K + \frac{r^M}{r^M + 1 - \delta} \left(d\ln Y_{t+1}^M - d\ln K_{t+1}^M \right), \tag{44}
$$

$$
d\ln C_t^M = -\frac{K_1}{C_0^M} d\ln K_{t+1} + \frac{K_0 (1-\delta)}{C_0^M} d\ln K_t + \frac{Y_0^M - G_M^0}{C_0^M} d\ln Y_t^M + \frac{EX_M^0}{C_0^M} d\ln Y_t^A +
$$

$$+\frac{-G_M^0}{C_0^M}d\ln g_t+\frac{EX_M^0}{C_0^M}d\ln q_t+\frac{EX_M^0}{C_0^M}d\ln x_t-d\ln N_t. \tag{45}$$

Denote the matrix $E^0=\left[\begin{array}{cccccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -1 & \frac{-G_M^0}{C_0^M} & \frac{EX_M^0}{C_0^M} & \frac{EX_M^0}{C_0^M} & 0 & 0 \end{array}\right]$.

Then we can rewrite the resource constraint as follows:

$$d\ln C_t^M=-\frac{K_1}{C_0^M}d\ln K_{t+1}+\frac{K_0(1-\delta)}{C_0^M}d\ln K_t+\frac{Y_0^M-G_M^0}{C_0^M}d\ln Y_t^M+\frac{EX_M^0}{C_0^M}d\ln Y_t^A+E^0Z_t \tag{46}$$

We can use the known responses of endogenous variables from the solution represented by matrix D to rewrite these equations and collect terms. Then we can use the resource constraint which is shifted forward in time by one-period and substitute consumption in periods t and $t+1$ into the Euler equation to obtain a system of linear equations with respect to capital. These equations only have capital in three adjacent periods as unknowns, while the rest of the variables are just algebraic functions of parameters and the state of the economy around which we are linearizing. The resulting equations are as follows:

$$a_1k_t+c_1k_{t+2}-b_1k_{t+1}=-g_0Z_t+g_1Z_{t+1},$$

where $k_t=d\ln K_t$ and the parameters a_1,b_1,c_1,g_0,g_1 are as follows:

$$a_1=\frac{\frac{K_0(1-\delta)}{C_0^M}+\frac{Y_0^M-G_M^0}{C_0^M}D^0_{(1,13)}+\frac{EX_M^0}{C_0^M}D^0_{(2,13)}}{1-\frac{Y_0^M-G_M^0}{C_0^M}D^0_{(1,14)}-\frac{EX_M^0}{C_0^M}D^0_{(2,14)}},$$

$$b_1=\frac{\frac{K_1(1-\delta)}{C_1^M}+\frac{Y_1^M-G_M^1}{C_1^M}D^1_{(1,13)}+\frac{EX_M^1}{C_1^M}D^1_{(2,13)}}{1-\frac{Y_1^M-G_M^1}{C_1^M}D^1_{(1,14)}-\frac{EX_M^1}{C_1^M}D^1_{(2,14)}}\left(1-\frac{r^M\left(D^0_{(1,14)}-D^0_{(5,14)}\right)}{r^M+1-\delta}\right)+$$

$$+\left(\frac{\frac{K_1}{C_0^M}}{1-\frac{Y_0^M-G_M^0}{C_0^M}D^0_{(1,14)}-\frac{EX_M^0}{C_0^M}D^0_{(2,14)}}-\frac{r^M\left(D^0_{(1,13)}-D^0_{(5,13)}\right)}{r^M+1-\delta}\right),$$

$$c_1=\frac{K_2}{C_1^M}\frac{1-\frac{D^0_{(1,14)}-D^0_{(5,14)}}{\varepsilon_M}\frac{r^M}{r^M+1-\delta}}{1-\frac{Y_1^M-G_M^1}{C_1^M}D^1_{(1,14)}-\frac{EX_M^1}{C_1^M}D^1_{(2,14)}},$$

$$g_0=\frac{\frac{Y_0^M-G_M^0}{C_0^M}D^0_{(1,\cdot)}+\frac{EX_M^0}{C_0^M}D^0_{(2,\cdot)}+E^0}{1-\frac{Y_0^M-G_M^0}{C_0^M}D^0_{(1,14)}-\frac{EX_M^0}{C_0^M}D^0_{(2,14)}}+\left[\begin{array}{cccccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array}\right],$$

$$g_1 = \frac{\frac{Y_1^M - G_M^1}{C_1^M} D^1_{(1,\cdot)} + \frac{EX_M^1}{C_1^M} D^1_{(2,\cdot)} + E^1}{1 - \frac{Y_1^M - G_M^1}{C_1^M} D^1_{(1,14)} - \frac{EX_M^1}{C_1^M} D^1_{(2,14)}} \left(1 - \frac{r^M \left(D^0_{(1,14)} - D^0_{(5,14)} \right)}{r^M + 1 - \delta} \right) - $$

$$- \frac{r^M \left(D^0_{(1,\cdot)} - D^0_{(5,\cdot)} \right)}{r^M + 1 - \delta}.$$

Since the coefficients a, b, c only depend on certain ratios in the period around which we are linearizing, and change infinitesimallyin adjacent periods, for this solution we shall assume that they do not change with time. This is a standard assumption in any linearization exercise. We shall also leave the interpretation of these coefficients out for now. We arrive at the following system of equations that fully describes the evolution of the capital stock:

$$ak_{t-2} + ck_t - bk_{t-1} = 0, \quad \text{all } t \leq 0,$$

$$ak_{-1} + ck_1 - bk_0 = g_1 Z_0,$$

$$ak_0 + ck_2 - bk_1 = -g_0 Z_0,$$

$$ak_{t+1} + ck_{t+3} - bk_{t+2} = 0, \quad \text{all } t \geq 0.$$

Notice, that for all periods except $t = 0$ and $t = -1$, the equations are homogeneous:

$$ak_t + ck_{t+2} - bk_{t+1} = 0.$$

We can solve this via method of undetermined coefficients by postulating that

$$k_{t+1} = fk_t,$$

substituing into the equation and finding f, which then is a solution to the quadratic equation:

$$cf^2 - bf + a = 0.$$

This equation has two roots: $f_+ = \frac{b-\sqrt{b^2-4ac}}{2c}$ and $f_- = \frac{b+\sqrt{b^2-4ac}}{2c}$. Note that $0 < f_+ < 1$ and $0 < \frac{1}{f_-} < 1$. So one will propagate capital forward, and the other backwards. This is because the transversality condition prohibits an explosive growth of capital in the remote future, and the initial conditions pin down to zero the path of capital in the past. Now let us solve the remaining two non-homogeneous equations:

$$ak_{-1} + ck_1 - bk_0 = g_1 Z_0,$$

$$ak_0 + ck_2 - bk_1 = -g_0 Z_0.$$

Substitute $k_2 = f_+ k_1$ and $k_{-1} = \frac{1}{f_-} k_0$ and solve with respect to k_0 and k_1:

$$\left(a\frac{1}{f_-} - b\right) k_0 + ck_1 = g_1 Z_0,$$

$$ak_0 + (cf_+ - b)\, k_1 = -g_0 Z_0.$$

This is a system of two equations in two unknowns which has a unique solution:

$$d\ln K_1 = \frac{ag_1 + \left(a\frac{1}{f_-} - b\right) g_0}{ac - (cf_+ - b)\left(a\frac{1}{f_-} - b\right)} Z_0,$$

$$d\ln K_0 = \frac{g_1 Z_0 \left(ac - (cf_+ - b)\left(a\frac{1}{f_-} - b\right)\right) - c\left(ag_1 + \left(a\frac{1}{f_-} - b\right) g_0\right) Z_0}{\left(a\frac{1}{f_-} - b\right)\left(ac - (cf_+ - b)\left(a\frac{1}{f_-} - b\right)\right)}.$$

We add to this the geometrical decay of capital to zero both in the past and future that we established earlier:

$$d\ln K_{+s} = d\ln K_1 \left(f_+\right)^{s-1}, \qquad \text{for all } s > 1,$$

$$d\ln K_{-s} = d\ln K_0 \left(f_-\right)^{-s}, \qquad \text{for all } s > 0.$$

This gives us the complete path of capital. The next step is to compute the path of consumption c_t^M. This can be achieved by using the resource constraint. Once we know capital and consumption, we can compute the rest of the endogenous variables using matrix D :

$$S_t = DZ_t,$$

where Z_t now includes the last two rows for capital and consumption. Numerically this model indeed captures up to second order terms, all the effects that we see in the full dynamic model.

4.8 Numerical precision of the linearized models

The linearized dynamic model captures three effects in closed form as 1) direct response to shocks in the static subsystem, 2) the response of the static subsystem to the change in manufacturing consumption, 3) the response of the static subsystem to the change in the capital stock. The evolution ov the elasticities and their components over time is shown in the following Figures. The static model with added effects of investment and capital taken as exogenous captures the effect of the full dynamic model exactly, with some measurement error only in the initial periods around the start of the sample. The linearized dynamic model captures all the effects, but has some computational errors for the investment wedge. Numerically linearization introduces a certain amount of numerical errors that tend to accumulate with the number of terms in the summation.

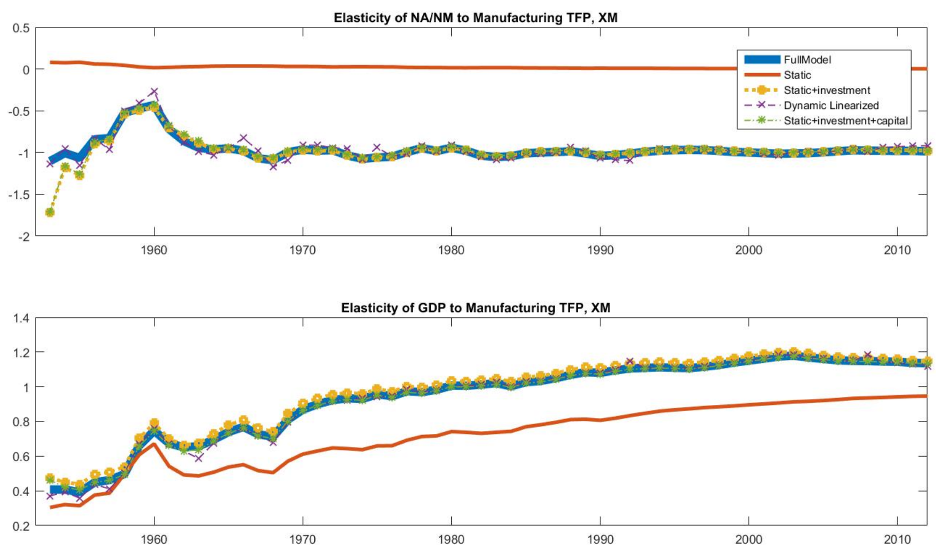

Figure 12: Response to Manufacturing TFP shock over time

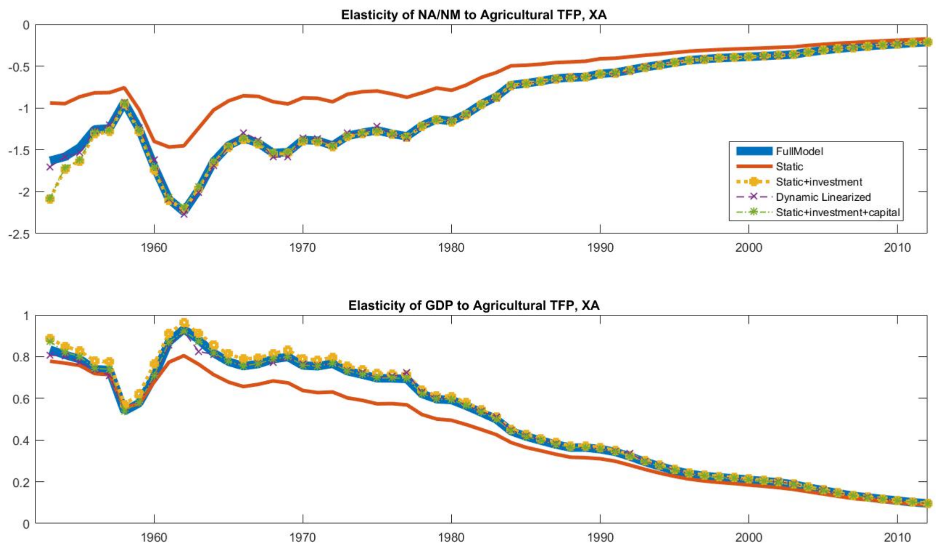

Figure 13: Response to Agricultural TFP shock over time

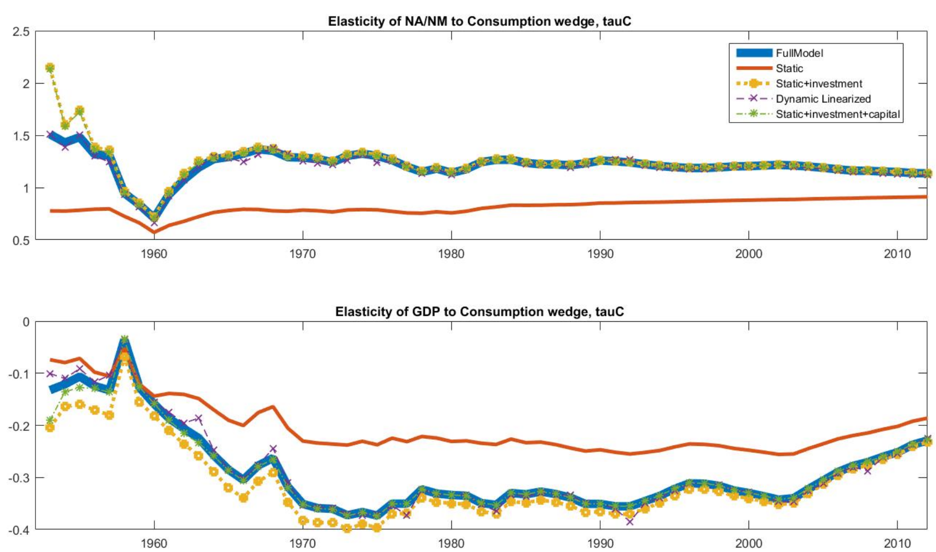

Figure 14: Response to Consumption Wedge shock over time

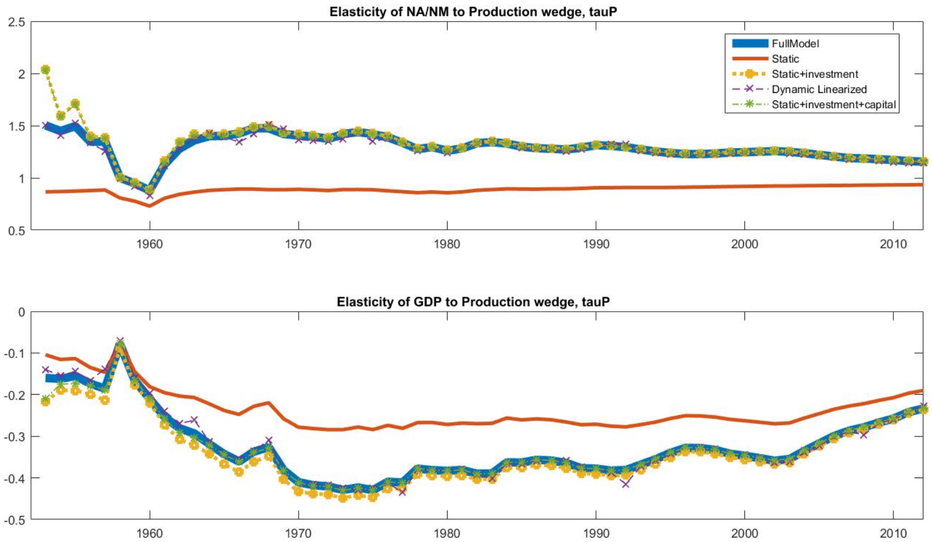

Figure 15: Response to Production Wedge shock over time

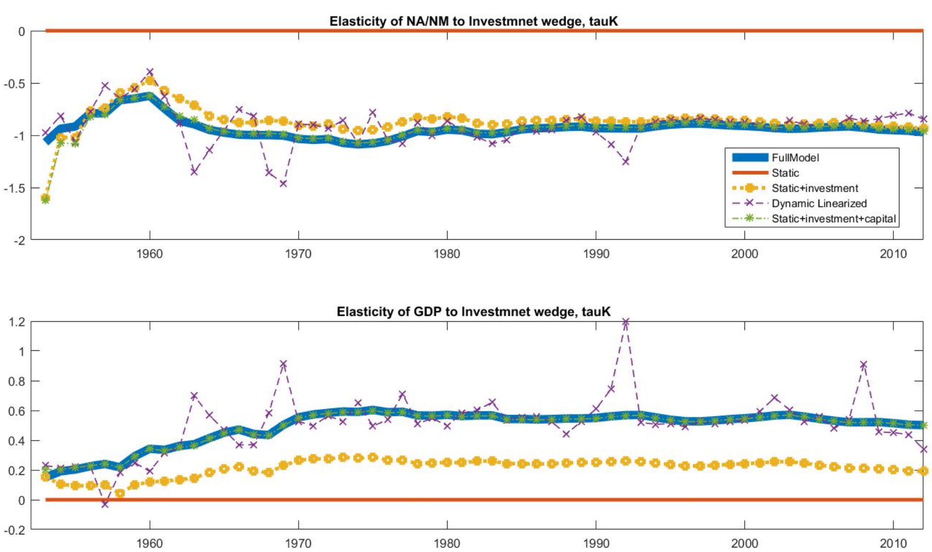

Figure 16: Response to Investment Wedge shock over time

4.9 Solution of the simple model and analysis of elasticities

4.9.1 First order conditions

In this Appendix we obtain closed form solutions for the simple model (see Subsection 4.4) and analyze the elasticities of the share of employment in agriculture with respect to wedges (i.e. percentage change of the share of employment in agriculture in response to one percent change in a wedge).

Let us consider a stylized version of the model in Section 2 of the main text:

$$\max \sum_{t=0}^{T} \beta^t \left[u\left(C_t^A\right) + \ln\left(C_t^M\right)\right], \tag{47}$$

$$C_t^A = X_t^A \left(K_t^A\right)^{\alpha_A} \left(N_t^A\right)^{1-\alpha_A}, \tag{48}$$

$$C_t^M + K_{t+1} = (1-\delta)K_t + X_t^M \left(K_t^M\right)^{\alpha_M} \left(N_t^M\right)^{1-\alpha_M}, \tag{49}$$

$$K_t^A + K_t^M = K_t, \tag{50}$$

$$N_t^A + N_t^M = 1, \tag{51}$$

$$K_0,\ K_{T+1} \text{ are given,}$$

and where $u\left(C_t^A\right) = \frac{\eta}{1\text{-}\eta} \ln\left(C_t^A - \gamma^A\right)$. In this model we assume that the population is constant, there is no trade and government consumption, and that production functions in both sectors have constant returns to scale. We also consider finite horizon. These assumptions are made for tractability's sake and can be relaxed. The intertemporal and intersectoral first order conditions for this model are given by equations (1)-(11) in the main text, where $\tau_{K,t}$ is the intertemporal wedge, and $\tau_{W,t}$ and $\tau_{R,t}$ are intersectoral labor and capital wedges, respectively.

Let the solution of the model above (that we will refer to as the "stylized model") be denoted by upper bars: $\left\{\overline{N}_t^A, \overline{N}_t^M, \overline{K}_t^A, \overline{K}_t^M\right\}$. Let us also denote

$$\Omega_t \equiv \frac{\alpha_M}{\left(\frac{\overline{K}_t^M}{\overline{N}_t^M}\right)^{1-\alpha_M}}.$$

In order to obtain tractable closed form solutions for the elasticities with regard to wedges, we will consider the following "simplified model":

$$\max \sum_{t=0}^{T} \beta^t \left[u\left(C_t^A\right) + \ln\left(C_t^M\right) \right], \tag{52}$$

$$C_t^A = A_t^A \left(K_t^A\right)^{\alpha_A} \left(N_t^A\right)^{1-\alpha_A}, \tag{53}$$

$$C_t^M + K_{t+1} = (1-\delta)K_t + X_t^M \left(K_t^M\right)^{\alpha_M} \left(N_t^M\right)^{1-\alpha_M} + X_t^M \Omega_t \left(K_t - \overline{K}_t\right), \tag{54}$$

$$K_t^A + K_t^M = \overline{K}_t, \tag{55}$$

$$N_t^A + N_t^M = 1. \tag{56}$$

The initial and terminal levels of capital stock are given: $K_0 = \overline{K}_0,\ K_{T+1} = \overline{K}_{T+1}$. The first order conditions for this simplified model are as follows. The intertemporal condition is:

$$\tau_{K,t} C_{t+1}^M = C_t^M \beta \left(1 - \delta + X_{t+1}^M \Omega_{t+1}\right). \tag{57}$$

The intersectoral labor first order condition is as follows:

$$\tau_{W,t} u'\left(C_t^A\right) \left(1-\alpha_A\right) X_t^A \left(\frac{K_t^A}{N_t^A}\right)^{\alpha_A} = \frac{1}{C_t^M} \left(1-\alpha_M\right) X_t^M \left(\frac{\overline{K}_t - K_t^A}{1-N_t^A}\right)^{\alpha_M}.$$

The intersectoral capital first order condition:

$$\tau_{R,t} u'\left(C_t^A\right) \alpha_A X_t^A \left(\frac{N_t^A}{K_t^A}\right)^{1-\alpha_A} = \frac{1}{C_t^M} \alpha_M X_t^M \left(\frac{1-N_t^A}{\overline{K}_t - K_t^A}\right)^{1-\alpha_M}.$$

The simple model has two important properties. First, by construction, if we substitute barred variables into the simplified model, the full model's feasibility constraints are satisfied. Second, in the simplified model, the first order conditions are linear in the wedges and sectoral TFPs. This allows us obtaining closed form solutions for elasticities with regard to wedges and TFPs.

The simplified model is different from the full model in the following way: in the simplified model the intratemporal allocation of capital between the sectors is delinked from the intertemporal capital choices. Therefore the elasticities in the stylized and simplified models can differ. However, as we show below, the simplified model is a very good approximation for the stylized model.

Notation. We will use the following notation: $\epsilon_{A,t} = -\frac{u''(C_t^A)}{u'(C_t^A)} C_t^A = \frac{C_t^A}{C_t^A - \gamma^A} > 0$. The closer the agricultural consumption is to the subsistence level, the higher the elasticity of consumption. We will use hats to denote percentage change: $\hat{\xi}$ stands for $\frac{d\xi}{\xi}$. We will use the simplified model above to obtain closed form expressions for elasticities of the endogenous variables (such as manufacturing consumption C_t^M and the share of labor employed in agriculture N_t^A) with response to the change in exogenous variables (wedges and sectoral TFPs).

4.9.2 Evolution of capital stock and manufacturing consumption

The intertemporal first order condition (57) implies

$$C_t^M = C_0^M \beta^t \prod_{s=1}^{t} \frac{1 - \delta + X_s^M \Omega_s}{\tau_{K,s}}.$$

This determines the elasticity of manufacturing consumption in each moment t up to a scalar $\hat{C}_0^M$:

$$\hat{C}_t^M = \hat{C}_0^M + \sum_{s=1}^{t} \frac{\hat{X}_s^M X_s^M \Omega_s}{1 - \delta + X_s^M \Omega_s} - \sum_{s=1}^{t} \widehat{\tau}_{K,s}. \tag{58}$$

The initial level of consumption C_0^M is to be found from the lifetime budget constraint. Using (54) for $t = 1, ..., T$, we find K_{T+1} as a function of K_0 :

$$\begin{aligned} K_{T+1} &= K_0 \prod_{s=0}^{T} \left(1 - \delta + X_s^M \Omega_s\right) + \\ &+ \sum_{t=0}^{T} \prod_{s=t+1}^{T} \left(1 - \delta + X_s^M X_s\right) \left[X_t^M \left(K_t^M\right)^{\alpha_M} \left(N_t^M\right)^{1-\alpha_M} - X_t^M \Omega_t \overline{K}_t - C_t^M\right]. \end{aligned}$$

This provides the ultimate equation for C_0^M :

$$\begin{aligned} C_0^M \sum_{t=0}^{T} \frac{\beta^t}{\prod_{s=1}^{t} \tau_{K,s}} &= K_0 \left(1 - \delta + X_0^M \Omega_0\right) - \frac{K_{T+1}}{\prod_{s=1}^{T} \left(1 - \delta + X_s^M \Omega_s\right)} + \\ &+ \sum_{t=0}^{T} \frac{\left[X_t^M \left(K_t^M\right)^{\alpha_M} \left(N_t^M\right)^{1-\alpha_M} - X_t^M \Omega_t \overline{K}_t\right]}{\prod_{s=1}^{t} \left(1 - \delta + X_s^M \Omega_s\right)}. \end{aligned} \tag{59}$$

Differentiating (59) we find

$$
\begin{aligned}
\hat{C}_0^M &= \frac{\sum_{t=0}^T \frac{\beta^t \sum_{s=1}^t \hat{\tau}_{K,s}}{\prod_{s=1}^t \tau_{K,s}}}{\sum_{t=0}^T \frac{\beta^t}{\prod_{s=1}^t \tau_{K,s}}} + \frac{1}{C_0^M \sum_{t=0}^T \frac{\beta^t}{\prod_{s=1}^t \tau_{K,s}}} \left\{ K_0 \left(1-\delta+\hat{X}_0^M X_0^M \Omega_0\right) \right. \\
&+ \frac{K_{T+1} \sum_{t=1}^T \left(1-\delta+\hat{X}_s^M X_s^M \Omega_s\right)}{\prod_{s=1}^T \left(1-\delta+X_s^M \Omega_s\right)} - \\
&- \sum_{t=0}^T \left[\alpha_M \frac{K_t^A}{K_t^M} \hat{K}_t^A + (1-\alpha_M) \frac{N_t^A}{N_t^M} \hat{N}_t^A\right] \frac{X_t^M \left(K_t^M\right)^{\alpha_M} \left(N_t^M\right)^{1-\alpha_M}}{\prod_{s=1}^t \left(1-\delta+X_s^M \Omega_s\right)} + \\
&+ \sum_{t=0}^T \frac{\left[X_t^M \left(K_t^M\right)^{\alpha_M} \left(N_t^M\right)^{1-\alpha_M} - x_t^M \Omega_t \overline{K}_t\right]}{\prod_{s=1}^t \left(1-\delta+X_s^m \Omega_s\right)} \hat{X}_t^m - \\
&- \left. \sum_{t=0}^T \frac{\left[X_t^M \left(K_t^M\right)^{\alpha_M} \left(N_t^M\right)^{1-\alpha_M} - X_t^M \Omega_t \overline{K}_t\right]}{\prod_{s=1}^t \left(1-\delta+X_s^M \Omega_s\right)} \sum_{s=1}^t \frac{\hat{X}_s^M X_s^M \Omega_s}{\left(1-\delta+X_s^M \Omega_s\right)} \right\}. \qquad (60)
\end{aligned}
$$

Re-arranging the terms, we find that the elasticity of the initial consumption is

$$
\begin{aligned}
\hat{C}_0^M &= -\sum_{t=0}^T \Psi_t \left[\alpha_M \frac{K_t^A}{K_t^M} \hat{K}_t^A + (1-\alpha_M) \frac{N_t^A}{N_t^M} \hat{N}_t^A\right] + \\
&+ \frac{\sum_{t=0}^T \frac{\beta^t \sum_{s=1}^t \hat{\tau}_{K,s}}{\prod_{s=1}^t \tau_{K,s}}}{\sum_{t=0}^T \frac{\beta^t}{\prod_{s=1}^t \tau_{K,s}}} + \sum_{t=0}^T \Phi_t \hat{X}_t^M, \qquad (61)
\end{aligned}
$$

where

$$
\Psi_t \equiv \frac{1}{C_0^M \sum_{t=0}^T \frac{\beta^t}{\prod_{s=1}^t \tau_{K,s}}} \frac{X_t^M \left(K_t^M\right)^{\alpha_M} \left(N_t^M\right)^{1-\alpha_M}}{\prod_{s=1}^t \left(1-\delta+X_s^M \Omega_s\right)},
$$

and Φ_t are the respective terms at $\hat{X}_t^M$ in the equation (60).

4.9.3 Elasticity with regard to manufacturing TFP

The agricultural production function (53) immediately implies

$$
\hat{C_t^A} = \alpha_A \hat{K_t^A} + (1-\alpha_A) \hat{N_t^A}. \qquad (62)
$$

Let us differentiate the intersectoral first order conditions:

$$
B_t \begin{pmatrix} \hat{K_t^A} \\ \hat{N_t^A} \end{pmatrix} = \begin{pmatrix} 1 \\ 1 \end{pmatrix} \left[\hat{X}_t^M - \hat{C}_0^M - \sum_{s=1}^t \frac{\hat{X}_s^M X_s^M \Omega_s}{1-\delta+X_s^M \Omega_s}\right]. \qquad (63)
$$

Here the matrix $B_t = \|b_{ij,t}\|$ is as follows:

$$
\begin{aligned}
b_{11,t} &= \alpha_A + \alpha_M \frac{K_t^A}{K_t^M} - \epsilon_{A,t}\alpha_A, \\
b_{12,t} &= -\alpha_A - \alpha_M \frac{N_t^A}{N_t^M} - \epsilon_{A,t}\left(1-\alpha_A\right), \\
b_{21,t} &= -\left(1-\alpha_A\right) - \left(1-\alpha_M\right)\frac{K_t^A}{K_t^M} - \epsilon_{A,t}\alpha_A, \\
b_{22,t} &= 1-\alpha_A + \left(1-\alpha_M\right)\frac{N_t^A}{N_t^M} - \epsilon_{A,t}\left(1-\alpha_A\right).
\end{aligned}
$$

Each cell of the matrix B_t includes three terms. The first term (proportional to α_A or to $1-\alpha_A$) is the effect on the agricultural interest rate (first line) or the agricultural wage (second line). The second term (proportional to α_M or to $1-\alpha_M$) is the effect on manufacturing interest rate (first line) or manufacturing wage (second line). The third term (proportional to $\epsilon_{A,t}$) is the effect of non-homotheticity (that works through the effect on agricultural consumption). The solution is therefore straightforward:

$$
\begin{pmatrix} \hat{K_t^A} \\ \hat{N_t^A} \end{pmatrix} = B_t^{-1} \begin{pmatrix} 1 \\ 1 \end{pmatrix} \left[\hat{X}_t^M - \hat{C}_0^M - \sum_{s=1}^{t} \frac{\hat{X}_s^M X_s^M \Omega_s}{1-\delta+X_s^M\Omega_s} \right].
$$

By inverting the matrix B_t we arrive at the following elasticities:

$$
\hat{N_t^A} = \frac{\left[\hat{C}_0^M + \sum_{s=1}^{t} \frac{\hat{X}_s^M X_s^M \Omega_s}{1-\delta+X_s^M\Omega_s} - \hat{X}_t^M\right]\left[1+\frac{K_t^A}{K_t^M}\right]}{\left(\alpha_M-\alpha_A\right)\left(\frac{N_t^A}{N_t^M}-\frac{K_t^A}{K_t^M}\right)+\epsilon_t\left[1+\alpha_A\frac{N_t^A}{N_t^M}+\left(1-\alpha_A\right)\frac{K_t^A}{K_t^M}\right]}, \tag{64}
$$

$$
\hat{K_t^A} = \frac{\left[\hat{C}_0^M + \sum_{s=1}^{t} \frac{\hat{X}_s^M X_s^M \Omega_s}{1-\delta+X_s^M\Omega_s} - \hat{X}_t^M\right]\left[1+\frac{N_t^A}{N_t^M}\right]}{\left(\alpha_M-\alpha_A\right)\left(\frac{N_t^A}{N_t^M}-\frac{K_t^A}{K_t^M}\right)+\epsilon_t\left[1+\alpha_A\frac{N_t^A}{N_t^M}+\left(1-\alpha_A\right)\frac{K_t^A}{K_t^M}\right]}. \tag{65}
$$

Notice that the first two terms in the numerator $\hat{C}_0^M + \sum_{s=1}^{t} \frac{\hat{X}_s^M X_s^M \Omega_s}{1-\delta+X_s^M\Omega_s}$ describe the impact of manufacturing TFP shock through consumption $\hat{C}_t^M$ (which is further decomposed into the impact on lifetime income $\hat{C}_0^M$ and the impact on income growth rate). For example, if the manufacturing TFP only changes in period i then the demand increases in all periods after i (by $\frac{\hat{X}_i^M X_i^M \Omega_i}{1-\delta+X_i^M\Omega_i}$ per cent). The last term in the numerator $-\hat{X}_t^M$ is the "supply-side" channel: the higher the manufacturing TFP, the less incentive there is for allocating resources to agriculture. The denominator (which is equal to $\det B_t$) shows that the impact of manufacturing TFP depends on the non-homotheticity of the utility of agricultural consumption $\epsilon_{A,t}$ and on the difference between factor shares in manufacturing and agricultural sectors $\left(\alpha_M-\alpha_A\right)\left(\frac{N_t^A}{N_t^M}-\frac{K_t^A}{K_t^M}\right)$.

The equations (64)-(65) describe the solution up to a scalar $\hat{C}_0^M$ (the elasticity of lifetime income). The latter is found from (61):

$$\hat{C}_0^M = \frac{\sum_{t=0}^{T} \frac{\Psi_t \xi_t}{\det B_t} \left(\hat{X}_t^M - \sum_{s=1}^{t} \frac{\hat{X}_s^M X_s^M \Omega_s}{1-\delta+X_s^M \Omega_s} \right) + \sum_{t=0}^{T} \Phi_t \hat{X}_t^M}{1+\sum_{t=0}^{T} \frac{\Psi_t \xi_t}{\det B_t}},$$

where

$$\xi_t = \alpha_M \frac{K_t^A}{K_t^M} + (1-\alpha_M) \frac{N_t^A}{N_t^M} + \frac{K_t^A}{K_t^M} \frac{N_t^A}{N_t^M},$$

and

$$\det B_t = (\alpha_M - \alpha_A) \left(\frac{N_t^A}{N_t^M} - \frac{K_t^A}{K_t^M} \right) + \epsilon_{A,t} \left[1 + \alpha_A \frac{N_t^A}{N_t^M} + (1-\alpha_A) \frac{K_t^A}{K_t^M} \right].$$

To sum up, let us describe the response to a shock to the manufacturing TFP that takes place X_t^M at $t = i$ (while there is no shock in all other moments). In this case the elasticity of non-agricultural consumption $\frac{\hat{C}_t^M}{\hat{X}_i^M}$ is constant (equal to $\frac{\hat{C}_0^M}{\hat{X}_i^M}$) in all periods preceding i. At $t \geq i$ the elasticity is also constant but higher than at $t < i$ (equal to $\frac{\hat{C}_0^M}{\hat{X}_i^M} + \frac{X_i^M \Omega_i}{1-\delta+X_i^M \Omega_i}$).

The elasticity of the share of agricultural employment $\frac{\hat{N_t^A}}{\hat{X}_i^M}$ in all periods preceding i is proportional to $\frac{1+\frac{K_t^A}{K_t^M}}{\det B_t}$. For $t > i$ it is also proportional to $\frac{1+\frac{K_t^A}{K_t^M}}{\det B_t}$ but is exactly $1 + \frac{\frac{X_i^M \Omega_i}{1-\delta+X_i^M X_i}}{\hat{C}_0^M / \hat{A}_i^M}$ times higher than for $t < i$. In the period $t = i$ the elasticity is lower by $1 - \frac{X_i^M \Omega_i}{1-\delta+X_i^M \Omega_i} = \frac{1-\delta}{1-\delta+X_i^M \Omega_i}$ percent than at $t = i - 1$.

Figure 17 compares the elasticities with regard to manufacturing TFP (with the shock happening at $t = 50$) in the non-linear model (47)-(51) and the simplified model (52)-(56). The Figure shows that the simplified model correctly predicts the contemporaneous elasticities ($t = i$) while differs from the full model slightly for $t \neq i$.

4.9.4 Elasticity with regard to agricultural TFP

Agricultural TFP has no impact on the growth rate of the manufacturing consumption. However it does affect the level of manufactuing consumption C_0^M through the effect on lifetime income.

In order to find the elasticity, we differentiate the intersectoral first order conditions taking into account (62):

$$B_t \begin{pmatrix} \hat{K_t^A} \\ \hat{N_t^A} \end{pmatrix} = - \begin{pmatrix} 1 \\ 1 \end{pmatrix} \left[\hat{C}_0^M + \hat{X}_t^A (1-\epsilon_{A,t}) \right]. \tag{66}$$

The solution is as follows:

$$\left(\begin{array}{c} \hat{K_t^A} \\ \hat{N_t^A} \end{array}\right) = -B_t^{-1}\left(\begin{array}{c} 1 \\ 1 \end{array}\right)\left[\hat{C}_0^M + \hat{X}_t^A\left(1-\epsilon_{A,t}\right)\right].$$

Thus we obtain the elasticities for share of employment and capital in agriculture:

$$\hat{N_t^A} = \frac{\left[\hat{C}_0^M + \hat{X}_t^A - \epsilon_{A,t}\hat{X}_t^A\right]\left[1+\frac{K_t^A}{K_t^M}\right]}{\left(\alpha_M-\alpha_A\right)\left(\frac{N_t^A}{N_t^M}-\frac{K_t^A}{K_t^M}\right)+\epsilon_{A,t}\left[1+\alpha_A\frac{N_t^A}{N_t^M}+\left(1-\alpha_A\right)\frac{K_t^A}{K_t^M}\right]}, \tag{67}$$

$$\hat{K_t^A} = \frac{\left[\hat{C}_0^M + \hat{X}_t^A - \epsilon_{A,t}\hat{X}_t^A\right]\left[1+\frac{N_t^A}{N_t^M}\right]}{\left(\alpha_M-\alpha_A\right)\left(\frac{N_t^A}{N_t^M}-\frac{K_t^A}{K_t^M}\right)+\epsilon_{A,t}\left[1+\alpha_A\frac{N_t^A}{N_t^M}+\left(1-\alpha_A\right)\frac{K_t^A}{K_t^M}\right]}. \tag{68}$$

The first term $\hat{C}_0^M$ in the numerator reflects the increase of the manufacturing consumption through the increase in the life-time income. The second term $\hat{X}_t^A$ reflects the supply-side channel: higher agricultural TFP increases incentives to reallocate resources towards agriculture. Finally, the last term $-\epsilon_{A,t}\hat{X}_t^A$ is the effect of non-homotheticity: the closer the current agricultural consumption to the subsistence level, the lower is the effect of agricultural TFP on the share of resources to be kept in the agriculture.

The impact on the lifetime income $\hat{C}_0^M$ is found from (61):

$$\hat{C}_0^M = -\frac{\sum_{t=0}^T \frac{\Psi_t \xi_t}{\det B_t}\left(\hat{X}_t^A - \epsilon_{A,t}\hat{X}_t^A\right)}{1+\sum_{t=0}^T \frac{\Psi_t \xi_t}{\det B_t}}.$$

Suppose that there is a shock to X_t^A at $t=i$ and there is no shock in all other moments. Then the elasticity of non-agricultural consumption $\frac{\hat{C}_t^M}{\hat{X}_i^A}$ is constant over time and is equal to $-\frac{\frac{\Psi_i \xi_i}{\det B_i}(1-\epsilon_i)}{1+\sum_{t=0}^T \frac{\Psi_t \xi_t}{\det B_t}}$. The elasticity of the share of agricultural employment $\frac{\hat{N_t^A}}{\hat{X}_i^A}$ in all periods except for i is proportional to $\frac{1+\frac{K_t^A}{K_t^M}}{\det B_t}$. For $t=i$ it is also proportional to $\frac{1+\frac{K_t^A}{K_t^M}}{\det B_t}$ but is exactly $1+\frac{1-\epsilon_{A,i}}{\hat{C}_0^M/\hat{X}_i^A}$ times higher than for $t \neq i$.

Figure 18 shows that in terms of elasticity of employment share the simplified model is very similar to the stylized model (47)-(51).

4.9.5 Elasticity with regard to intertemporal wedge

The elasticity of manufacturing consumption to the change in intertemporal wedge is described by (58).

The first order conditions imply

$$B_t \begin{pmatrix} \hat{K_t^A} \\ \hat{N_t^A} \end{pmatrix} = -\begin{pmatrix} 1 \\ 1 \end{pmatrix} \left[\hat{C}_t^M\right] = \begin{pmatrix} 1 \\ 1 \end{pmatrix} \left[-\hat{C}_0^M + \sum_{s=1}^{t} \widehat{\tau}_{K,s}\right].$$

Therefore:

$$\begin{pmatrix} \hat{K_t^A} \\ \hat{N_t^A} \end{pmatrix} = \begin{pmatrix} 1 + \frac{N_t^A}{N_t^M} \\ 1 + \frac{K_t^A}{K_t^M} \end{pmatrix} \frac{-\hat{C}_0^M + \sum_{s=1}^{t} \widehat{\tau}_{K,s}}{\det B_t}.$$

Thus we arrive at the following solution:

$$\hat{N_t^A} = \frac{\left[\hat{C}_0^M - \sum_{s=1}^{t} \widehat{\tau}_{K,s}\right]\left[1 + \frac{K_t^A}{K_t^M}\right]}{(\alpha_M - \alpha_A)\left(\frac{N_t^A}{N_t^M} - \frac{K_t^A}{K_t^M}\right) + \epsilon_{A,t}\left[1 + \alpha_A \frac{N_t^A}{N_t^M} + (1-\alpha_A)\frac{K_t^A}{K_t^M}\right]}, \tag{69}$$

$$\hat{K_t^A} = \frac{\left[\hat{C}_0^M - \sum_{s=1}^{t} \widehat{\tau}_{K,s}\right]\left[1 + \frac{N_t^A}{N_t^M}\right]}{(\alpha_M - \alpha_A)\left(\frac{N_t^A}{N_t^M} - \frac{K_t^A}{K_t^M}\right) + \epsilon_{A,t}\left[1 + \alpha_A \frac{N_t^A}{N_t^M} + (1-\alpha_A)\frac{K_t^A}{K_t^M}\right]}. \tag{70}$$

There are two effects, both working through the impact on manufacturing consumption. First, there is an effect through the life-time income ($\hat{C}_0^M$) that holds in all periods. Second, there is an effect through slower growth of manufacturing consumption in all periods after the increase in intertemporal wedge (holds only in periods after the shock).

The percentage change of the life-time income $\hat{C}_0^M$ is as follows:

$$\hat{C}_0^M = \frac{\sum_{t=0}^{T} \frac{\Psi_t \xi_t}{\det B_t} \sum_{s=1}^{t} \widehat{\tau}_{K,s} + \frac{\sum_{t=0}^{T} \frac{\beta^t \sum_{s=1}^{t} \hat{\tau}_{K,s}}{\prod_{s=1}^{t} \tau_{K,s}}}{\sum_{t=0}^{T} \frac{\beta^t}{\prod_{s=1}^{t} \tau_{K,s}}}}{1 + \sum_{t=0}^{T} \frac{\Psi_t \xi_t}{\det B_t}}$$

Let us now summarize the contemporaneous elasticities and cross-elasticities with response to a shock to $\tau_{K,t}$ at $t = i$ (and no shock in all other moments). The elasticity of non-agricultural consumption $\frac{\hat{C}_t^M}{\widehat{\tau}_{K,i}}$ is constant (and equal to $\frac{\hat{C}_0^M}{\widehat{\tau}_{K,\mathrm{i}}}$) for all periods preceeding the shock $t < i$ and is constant and exactly one unit lower (equal to $\frac{\hat{C}_0^M}{\widehat{\tau}_{K,i}} - 1$) in all periods after the shock $t \geq i$. The elasticity of the share of agricultural employment $\frac{\hat{N_t^A}}{\widehat{\tau}_{K,\mathrm{i}}}$ in all periods preceding i will be proportional to $\frac{1+\frac{K_t^A}{K_t^M}}{\det B_t}$. For $t \geq i$ it is also proportional to $\frac{1+\frac{K_t^A}{K_t^M}}{\det B_t}$ but is exactly $\left(1 - \frac{1}{\frac{\hat{C}_0^M}{\widehat{\tau}_{K,\mathrm{i}}}}\right)$ times the one for $t < i$. If T is sufficiently large, that the expression in the parentheses is negative and the elasticity of labor share after the shock changes sign.

Figure 19 shows that the simplified model is similar to the non-linear model in terms of change around the time of the shock ($t = 50$); otherwise there are substantial differences between the elasticities in the two models.

4.9.6 Elasticity with regard to intersectoral wedges

Consider a shock in the intersectoral labor wedge and a shock in the intersectoral capital wedge. The respective first order conditions now include $\widehat{\tau}_{W,t}$ and $\widehat{\tau}_{R,t}$ on the left-hand side. Therefore the system of equations for capital and labor shares (63) becomes:

$$B_t \begin{pmatrix} \hat{K_t^A} \\ \hat{N_t^A} \end{pmatrix} = - \begin{pmatrix} \widehat{\tau}_{R,t} \\ \widehat{\tau}_{W,t} \end{pmatrix} - \begin{pmatrix} 1 \\ 1 \end{pmatrix} \left[\hat{C}_0^M \right].$$

(The intertemporal first order condition (58) implies that the growth rate of manufacturing consumption is not affected so $\hat{C}_t^M = \hat{C}_0^M$.)

The solution is as follows:

$$\begin{pmatrix} \hat{K_t^A} \\ \hat{N_t^A} \end{pmatrix} = -B_t^{-1} \begin{pmatrix} \widehat{\tau}_{R,t} + \hat{C}_0^M \\ \widehat{\tau}_{W,t} + \hat{C}_0^M \end{pmatrix}.$$

Therefore

$$\begin{aligned} \hat{N_t^A} &= \frac{1}{\det B_t} \left\{ \hat{C}_0^M \left[1 + \frac{K_t^A}{K_t^M} \right] + \widehat{\tau}_{W,t} \left[(1-\alpha_A) + (1-\alpha_M) \frac{K_t^A}{K_t^M} + \epsilon_{A,t}\alpha_A \right] + \right. \\ &+ \left. \widehat{\tau}_{R,t} \left[\alpha_A + \alpha_M \frac{K_t^A}{K_t^M} - \epsilon_{A,t}\alpha_A \right] \right\} \end{aligned}$$

and

$$\begin{aligned} \hat{K_t^A} &= \frac{1}{\det B_t} \left\{ \hat{C}_0^M \left[1 + \frac{N_t^A}{N_t^M} \right] + \widehat{\tau}_{W,t} \left[(1-\alpha_A) + (1-\alpha_M) \frac{N_t^A}{N_t^M} - \epsilon_{A,t} (1-\alpha_A) \right] + \right. \\ &+ \left. \widehat{\tau}_{R,t} \left[\alpha_A + \alpha_M \frac{N_t^A}{N_t^M} + \epsilon_{A,t} (1-\alpha_A) \right] \right\}. \end{aligned}$$

The impact on the lifetime income $\hat{C}_0^M$ is found from (61):

$$\hat{C}_0^M = \frac{\sum_{t=0}^T \Psi_t \left(\alpha_M \frac{K_t^A}{K_t^M}; (1-\alpha_M) \frac{N_t^A}{N_t^M} \right) B_t^{-1} \begin{pmatrix} \widehat{\tau}_{R,t} \\ \widehat{\tau}_{W,t} \end{pmatrix}}{1 - \sum_{t=0}^T \Psi_t \left(\alpha_M \frac{K_t^A}{K_t^M}; (1-\alpha_M) \frac{N_t^A}{N_t^M} \right) B_t^{-1} \begin{pmatrix} 1 \\ 1 \end{pmatrix}}.$$

Therefore the behavior of contemporaneous elasticities and cross-elasticities is as follows. Suppose that there is a shock to $\tau_{W,t}$ at $t = i$ and no shock in all other moments. Then the elasticity of non-agricultural consumption $\frac{\hat{C}_t^M}{\widehat{\tau}_{W,i}}$ is constant over time. The elasticity of the share of agricultural employment $\frac{\hat{N}_t^A}{\widehat{\tau}_{R,\text{i}}}$ in all periods before and after the shock i will be negative and proportional to $\frac{1+\frac{K_t^A}{K_t^M}}{\det B_t}$. At the time of the shock $t = i$ it is $1 - \frac{(1-\alpha_A)+(1-\alpha_M)\frac{K_t^A}{K_t^M}+\epsilon_{A,i}\alpha_A}{-\frac{\hat{C}_0^M}{\widehat{\tau}_{W,i}}\left[1+\frac{K_t^A}{K_t^M}\right]}$ times higher. If T is sufficiently large, $\frac{\hat{C}_0^M}{\widehat{\tau}_{W,i}}$ is small so the elasticity at the period of the shock $t = i$ changes sign (becomes positive) and is $\frac{(1-\alpha_A)+(1-\alpha_M)\frac{K_t^A}{K_t^M}+\epsilon_{A,i}\alpha_A}{-\frac{\hat{C}_0^M}{\widehat{\tau}_{W,i}}\left[1+\frac{K_t^A}{K_t^M}\right]} - 1$ times larger in absolute value than before and after.

Figure 20 shows that in terms of elasticity of the labor share the simplified model is very close to the non-linear model, especially at the time of the shock ($t = i$).

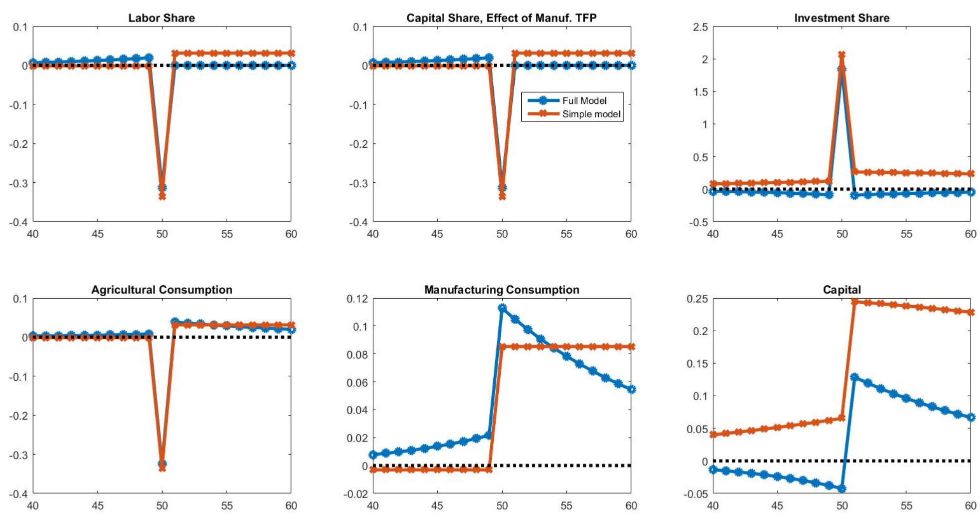

Figure 17: Elasticity with regard to manufacturing TFP in the stylized non-linear model (47)-(51) ("Full model") and in the simplified model (52)-(56) ("Simplified model").

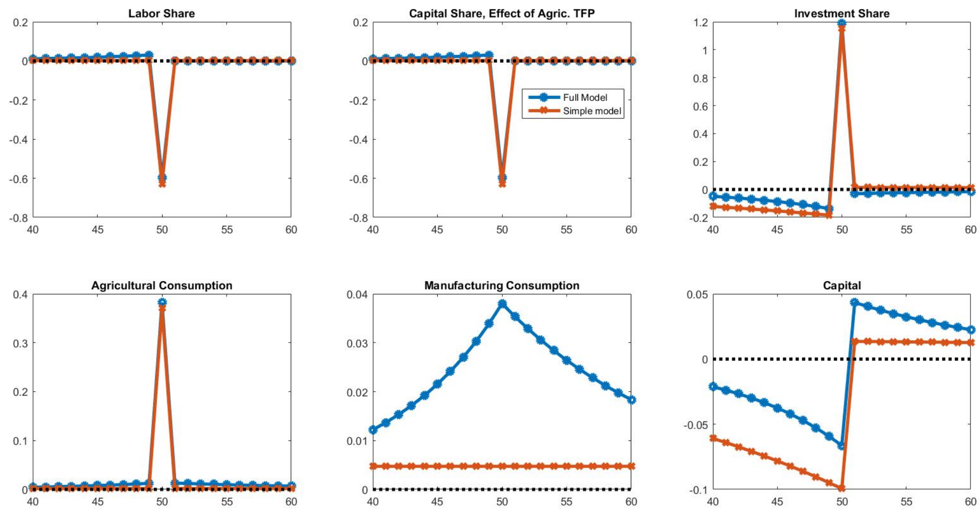

Figure 18: Elasticity with regard to agricultural TFP in the stylized non-linear model (47)-(51) ("Full model") and in the simplified model (52)-(56) ("Simplified model").

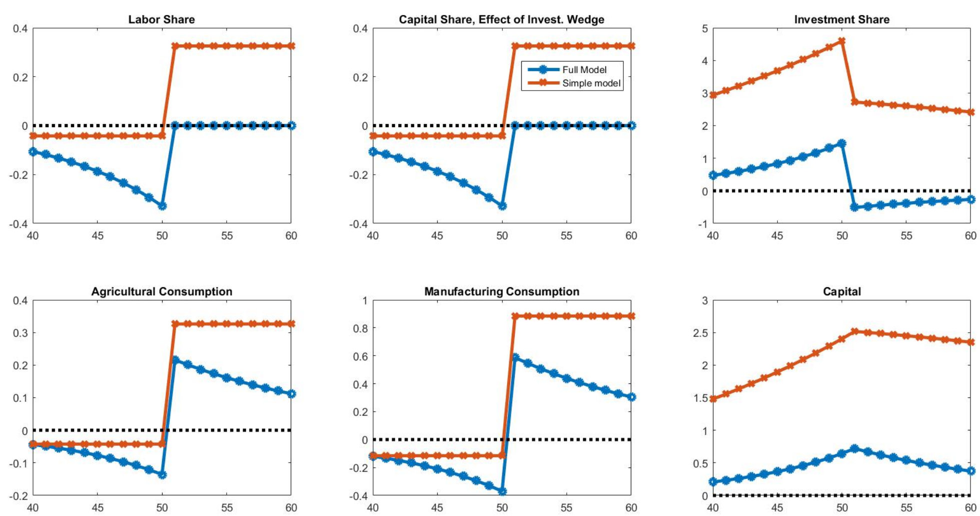

Figure 19: Elasticity with regard to intertemporal wedge in the stylized non-linear model (47)-(51) ("Full model") and in the simplified model (52)-(56) ("Simplified model").

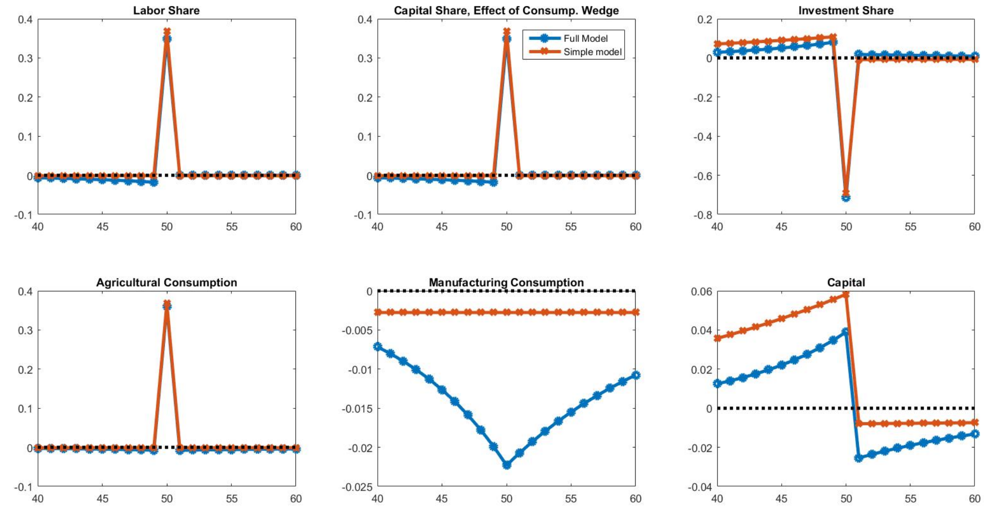

Figure 20: Elasticity with regard to intersectoral labor wedge in the stylized non-linear model (47)-(51) ("Full model") and in the simplified model (52)-(56) ("Simplified model").

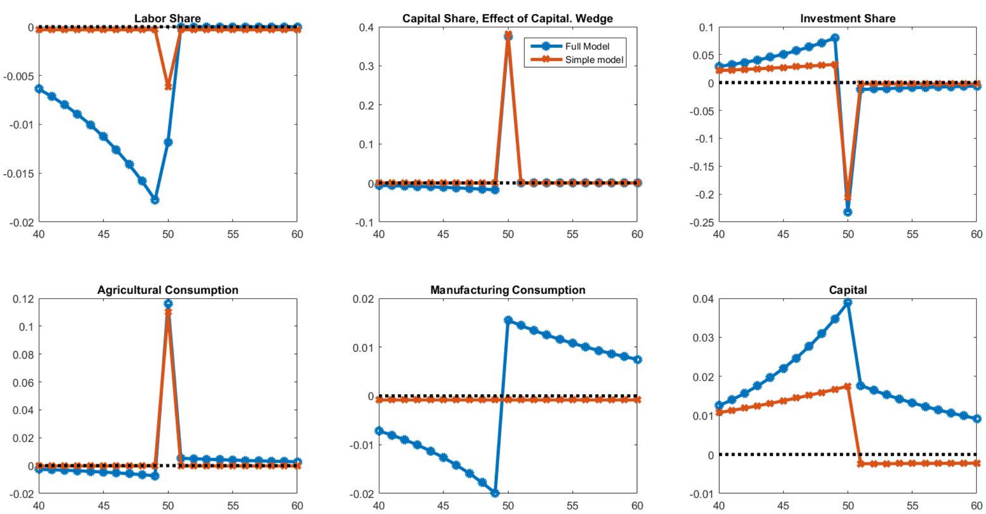

Figure 21: Elasticity with regard to intersectoral capital wedge in the stylized non-linear model (47)-(51) ("Full model") and in the simplified model (52)-(56) ("Simplified model").

5 Empirical Analysis

5.1 Elasticities

We compute elasticities of all economic variables to TFPs and wedges by re-computing the full path of the economy assuming a small deviation in TFP (or wedge) in one period at a time. As an illustration, we present the elasticities for the year e.g. 1967 in Figures 22-25. The intuition for the elasticities is as follows.

A positive agricultural TFP shock, shown in Figure 22, makes existing workers more productive. Labor is now more valuable in the manufacturing sector as the increase in productivity relaxes the subsistence requirement, so labor shifts towards the manufacturing sector. In addition, the consumers would like to spread out the production windfall into periods both preceding and following the period of the shock, which they can only do through (dis)investment. To achieve this, the consumers shift production even more towards the manufacturing sector in the period of the shock in order to invest more during the windfall, while they disinvest in all preceding and all following periods, which shifts workers towards agriculture in those periods. The overall effect on GDP is positive contemporaneously, but negative in anticipation of the shock. The effect of manufacturing TFP, shown in Figure 23, is essentially the same, although the contemporaneous effect is smaller because a manufacturing TFP shock does not relax the subsistence requirement as demand for manufacturing goods is homothetic.

A positive shock to the consumption wedge, shown in Figure 24, creates a tax on manufacturing consumption and artificially lowers the relative prices of agricultural goods. A lower price makes agricultural goods a better bargain, shifts demand towards them, so labor and capital inputs are reallocated towards the agricultural sector as supply follows demand. However, because of the increased tax, overall production and consumption drop. The dynamic effect captures the fact that consumers prefer to distribute the drop in consumption from the current period to future periods, which means building up capital in anticipation of the shock and disinvestment in the current and following periods.

A positive shock to the investment wedge, shown in Figure 25, makes capital transfer into the future more expensive. The consumers prefer to come into the taxed period with less capital and lower production since that allows them to reduce the stock that the tax is applied to. In the preceding periods investment is lower, in order to run down capital, so consumption is higher. In the periods that follow the tax, the consumers re-accumulate the capital stock that they had run down, but suffer from lower consumption.

The most striking observation is that most of the effects of TFP and wedges are contemporaneous, i.e. the effect is almost exclusively on the period of the shock. The only exception is the investment wedge which has a large anticipation effect: an investment wedge shock expected in the future leads to decumulation of capital many periods in advance. In the decomposition that follows, we compute separately the effects of contemporaneous, past and future shocks.

As shown in Figures 22-25 a shock in period 0 has effects on labor share and GDP in many past and future periods. Since these elasticities all multiply the same shock and all add up over time, we can add up the elasticities of effects on different time horizons to obtain and integral elasticity. We compare the magnitudes of contemporaneous and integral elasticities in Figures 26-29. For all shocks except the investment wedge, the contemporaneous effect dominates each individual cross-effect, but the sum of cross-effects is comparable with the contemporaneous effects. In contrast, for the investment wedge, the cross-effects dominate over the contemporaneous effects. For brevity, we do not report the elasticities of the production and mobility component here as they are very similar to the consumption component and identical to each other.

To check how the behavior of cross-elasticities changes over time, we plot full impulse-responses to shocks in each period in the form of a surface plot (these same values are shown as heatmaps in the main text to make the interpretation more transparent, and to save space), where one horizontal axis shows the time of the shock, the other horizontal axis shows lead and lag elasticities relative to the time of the shock, and the vertical axis shows the magnitude of the elasticity. As shown in Figures 30-37, the sizes of elasticities change considerably over time.

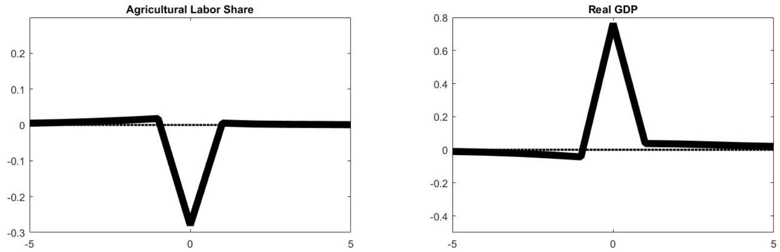

Figure 22: Elasticity of Response to Agricultural TFP in 1967

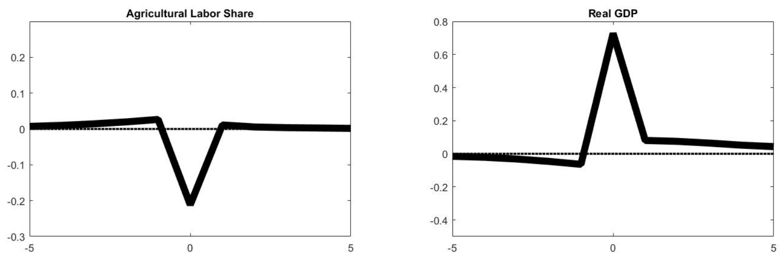

Figure 23: Elasticity of Response to Manufacturing TFP in 1967

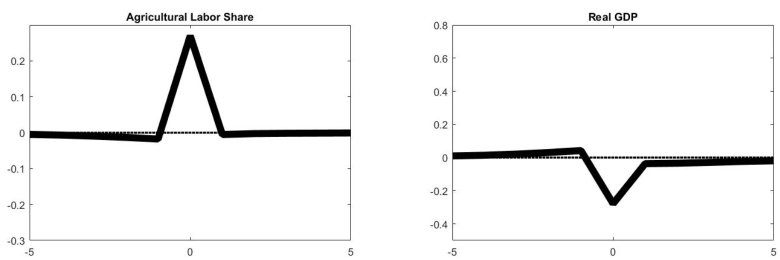

Figure 24: Elasticity of Response to Consumption Component of Labor Wedge shock in 1967

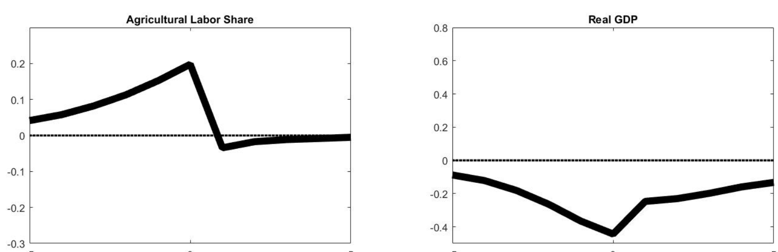

Figure 25: Elasticity of Response to 1% change in Investment Wedge in 1967

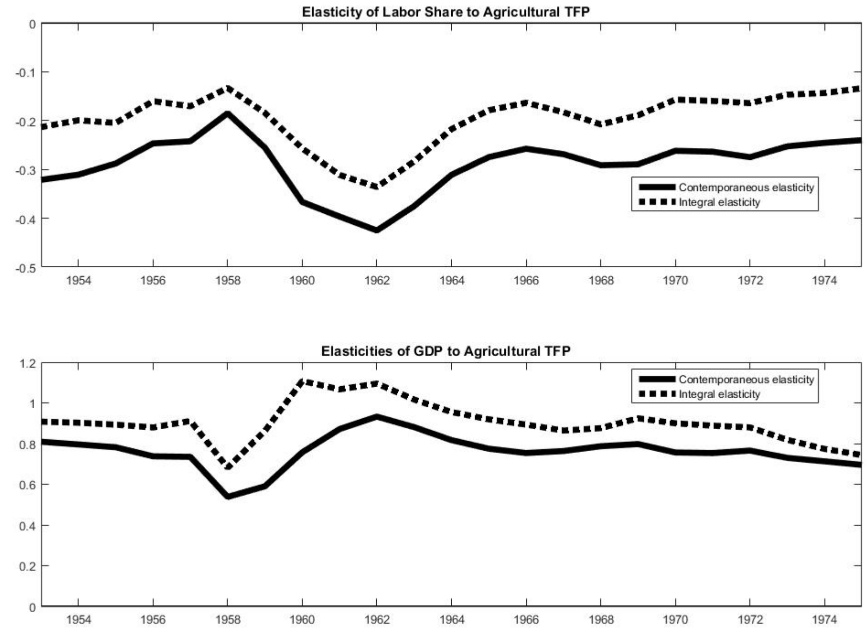

Figure 26: Elasticities of Response to Agricultural TFP

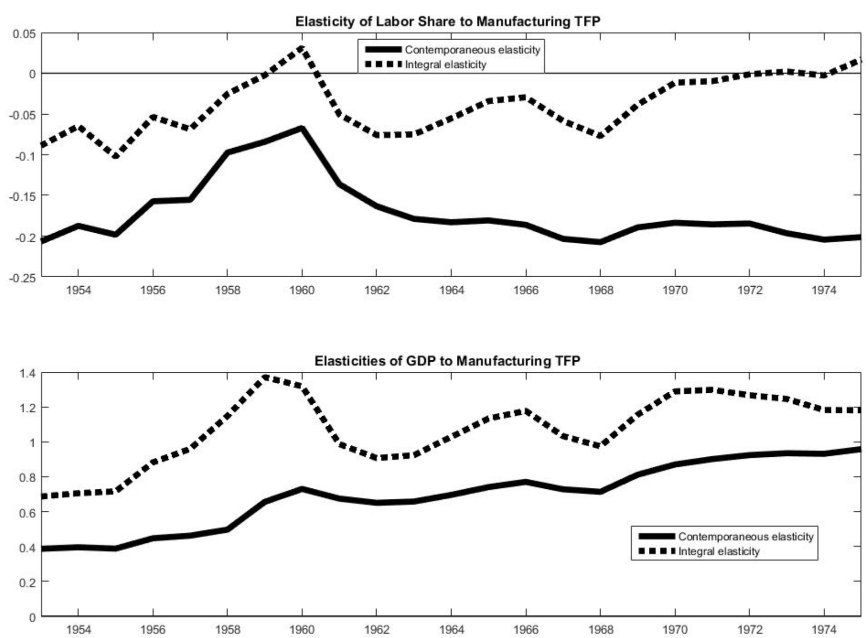

Figure 27: Elasticities of Response to Manufacturing TFP

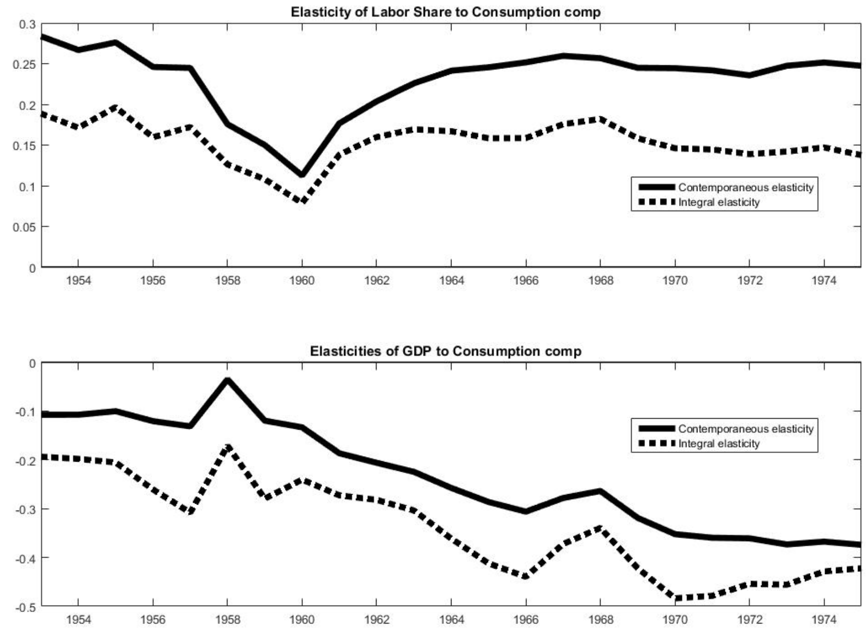

Figure 28: Elasticities of Response to Consumption Component of Labor Wedge

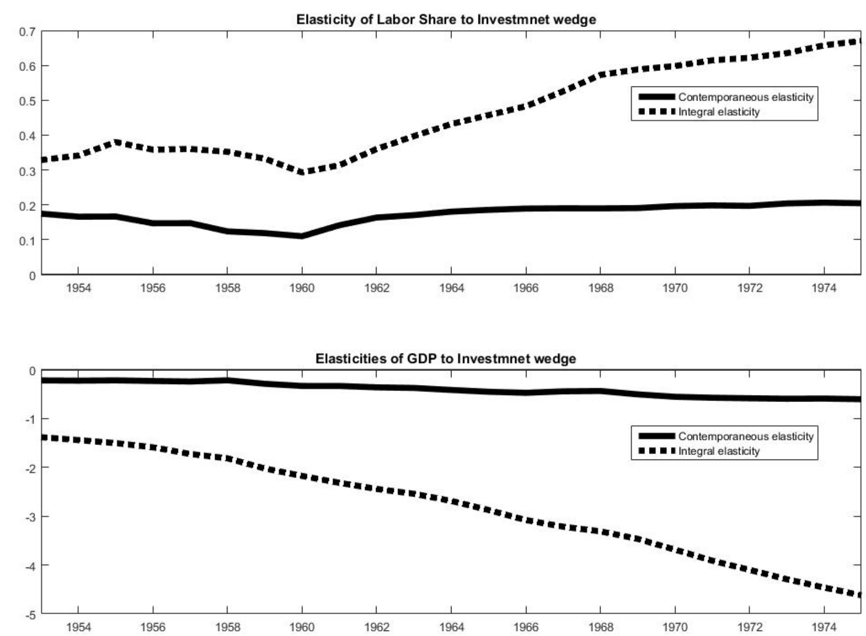

Figure 29: Elasticities of Response to Investment Wedge

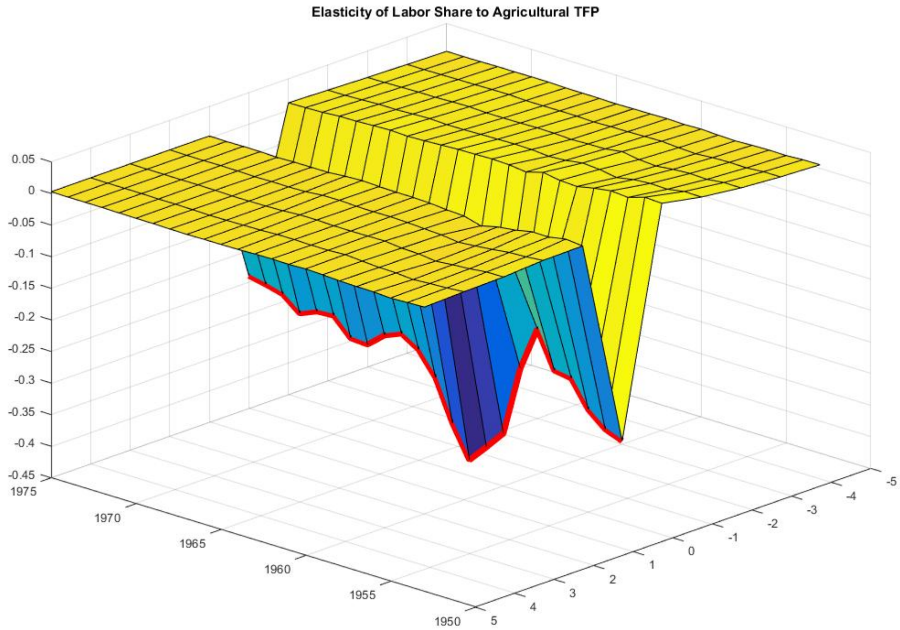

Figure 30: Elasticity of Labor Share to Agricultural TFP

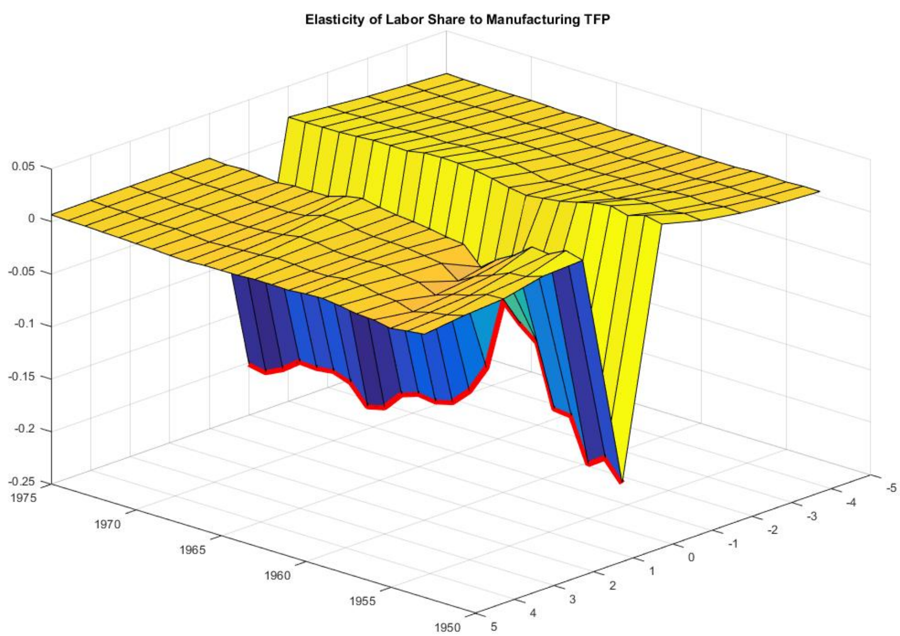

Figure 31: Elasticity of Labor Share to Manufacturing TFP

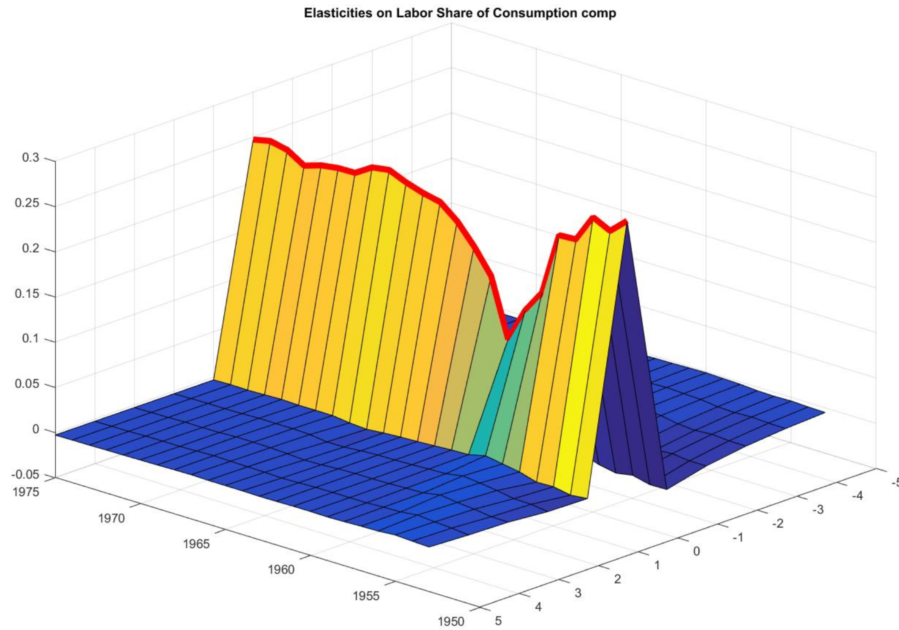

Figure 32: Elasticity of Labor Share to Consumption Component of Labor Wedge

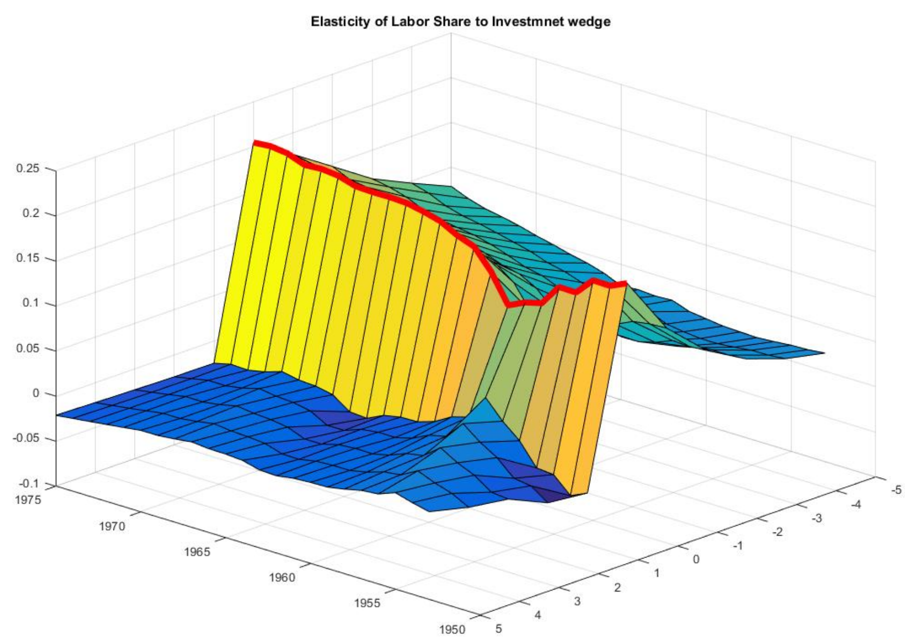

Figure 33: Elasticity of Labor Share to Investment Wedge

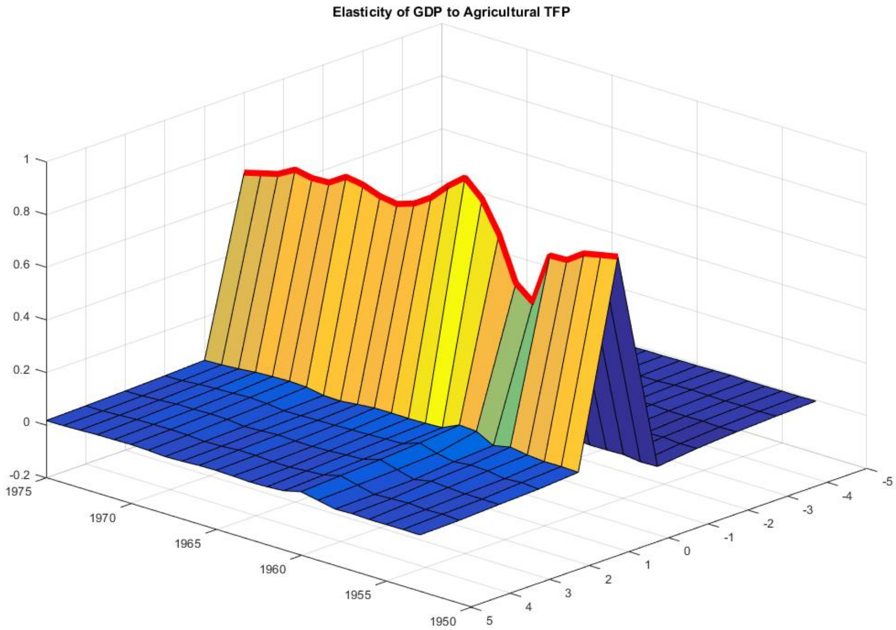

Figure 34: Elasticity of GDP to Agricultural TFP

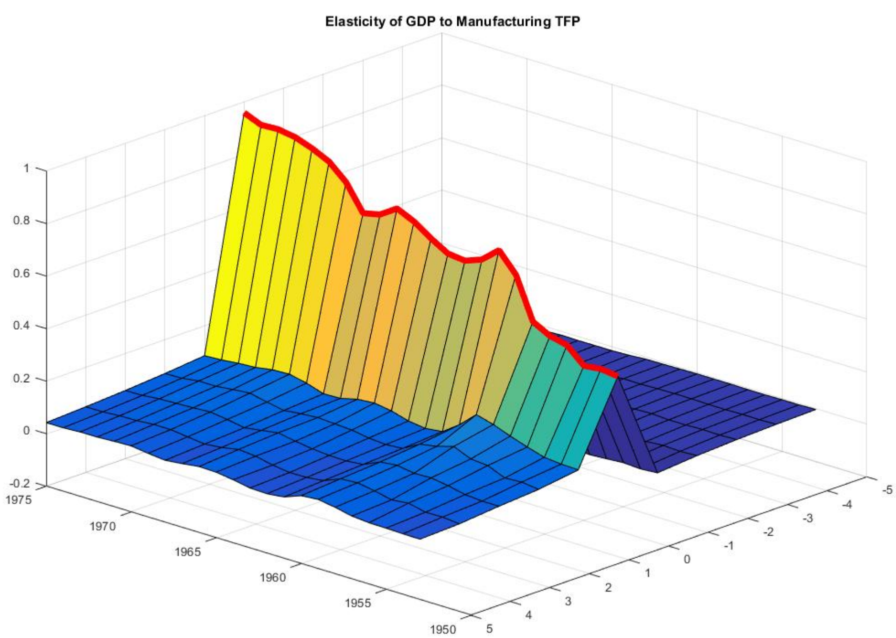

Figure 35: Elasticity of GDP to Manufacturing TFP

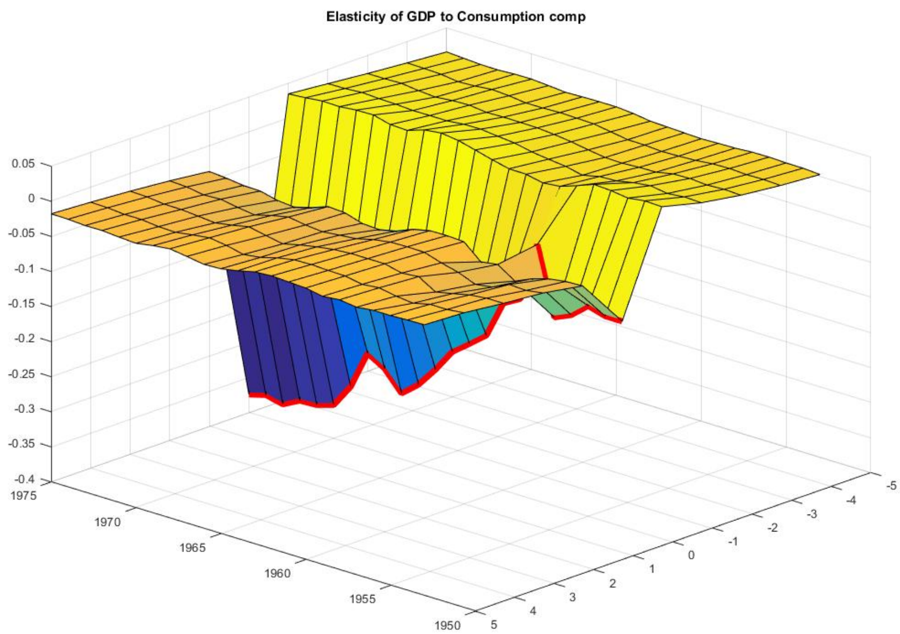

Figure 36: Elasticity of GDP to Consumption Component of Labor Wedge

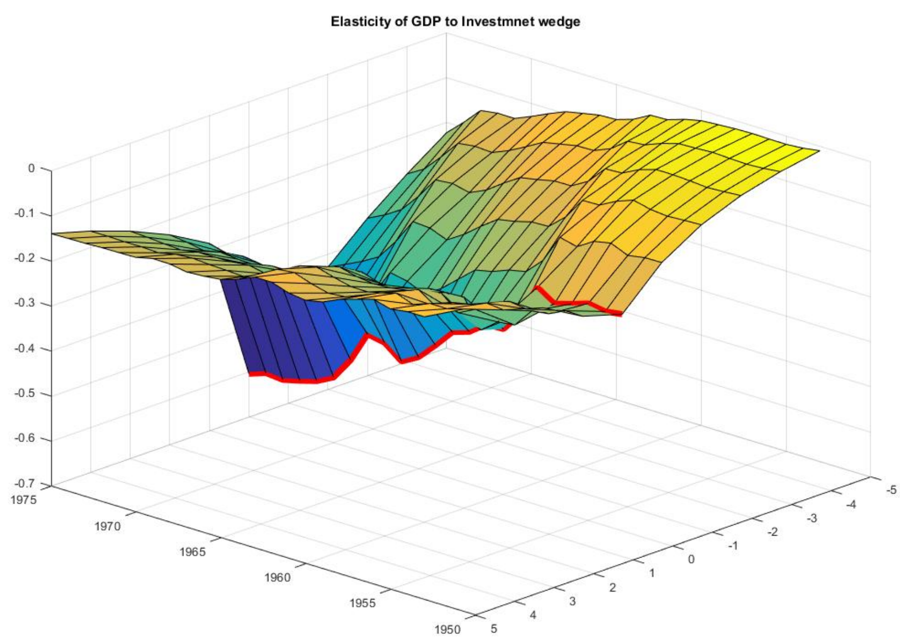

Figure 37: Elasticity of GDP to Investment Wedge

5.2 Comparison of Static and Dynamic Elasticities

The full change in endogenous variables in response to an exogenous shock is a sum of the static effect and two dynamic effects that we derived in Section 4. The first dynamic effect is a result of consumption smoothing. When a positive exogenous shock hits, consumers find that more consumption is available contemporaneously. Facing a windfall, consumers want to spread it out onto the following periods by investing or disinvesting today to be able to produce and consume more in future periods. Thus, the first dynamic effect is captured by the response of endogenous variables to the investment rate in the static model. The second dynamic effect is a result of anticipation of the shock. If a shock is anticipated, it is beneficial to preemptively adjust the level of capital with which to face the shock. This second effect is captured by the response to capital in the static model. The full dynamic response to shocks exactly equals the sum of the static contemporaneous response, as well as the contemporaneous responses to the dynamic paths of investment and capital taken as given from the full model. In what follows, we illustrate these three distinct components. The static model captures only the first effect derived in section 4.6, while the simple model from section 4.9 captures both the static and dynamic smoothing contemporaneous effects. We compare the behavior of elasticities to manufacturing and agricultural TFP, as well as the consumption and investment wedges in the Figures 38-41. We compare the behavior of contemporaneous elasticities of these shocks over time in Figures 42-45. The simple model tracks the contemporaneous elasticities well for all shocks except the investment wedge. The static model misses a substantial component of elasticities of most shocks, and completely misses the effects of manufacturing TFP and investment wedge.

In Figure 46 we compare how much of the contemporaneous contributions to labor share and GDP could be explained by each model. Contemporaneous effects of shocks explain the bulk of movements in the labor share and GDP. The simple model comes close to matching the effects of the full model, while the static model misses a big part of the action, especially during periods of large changes.

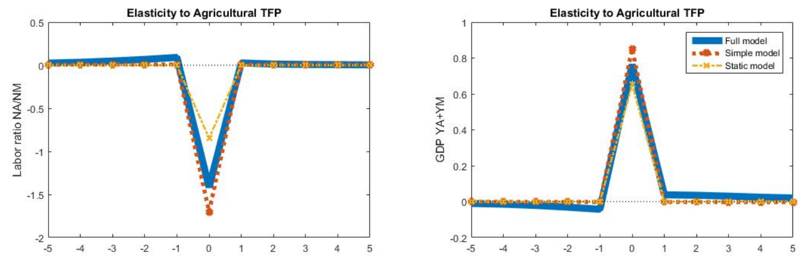

Figure 38: Elasticity of Response to Agricultural TFP in 1967

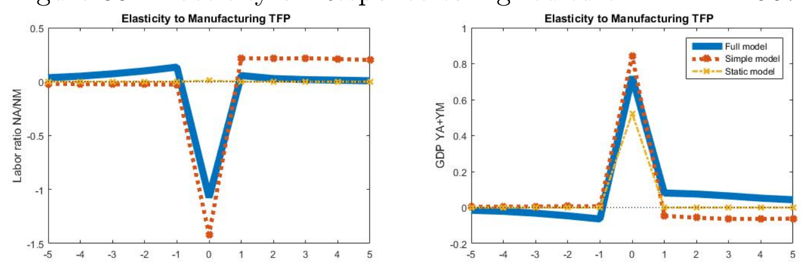

Figure 39: Elasticity of Response to Manufacturing TFP in 1967

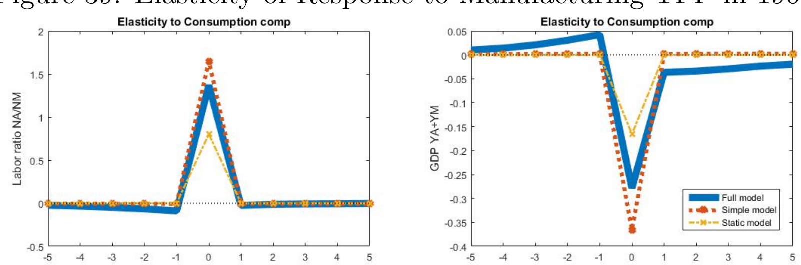

Figure 40: Elasticity of Response to Consumption Wedge in 1967

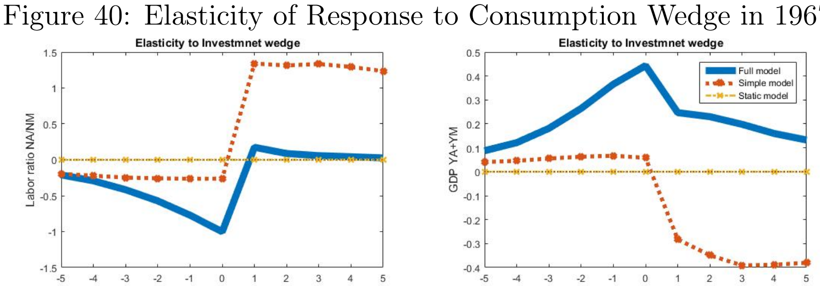

Figure 41: Elasticity of Response to Investment Wedge in 1967

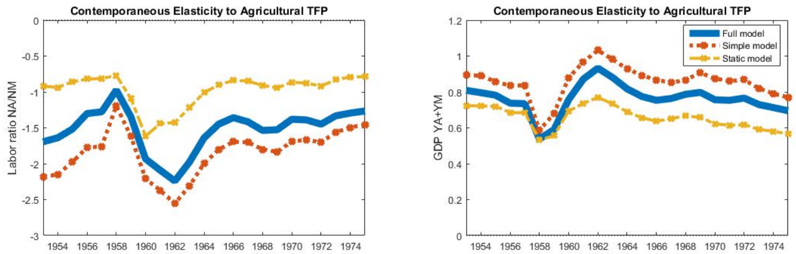

Figure 42: Contemporaneous Elasticity to Agricultural TFP over time

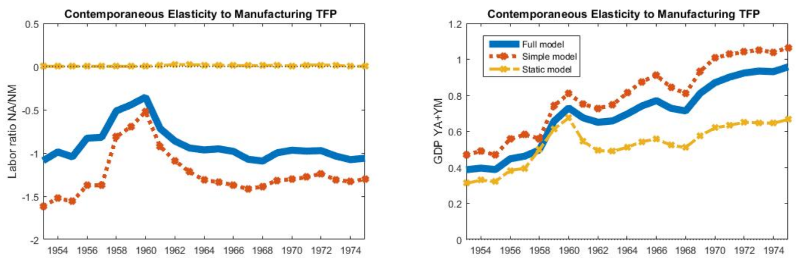

Figure 43: Contemporaneous Elasticity to Manufacturing TFP over time

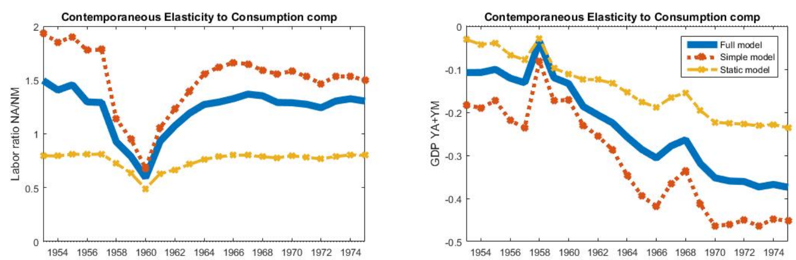

Figure 44: Contemporaneous Elasticity to Consumption Wedge over time

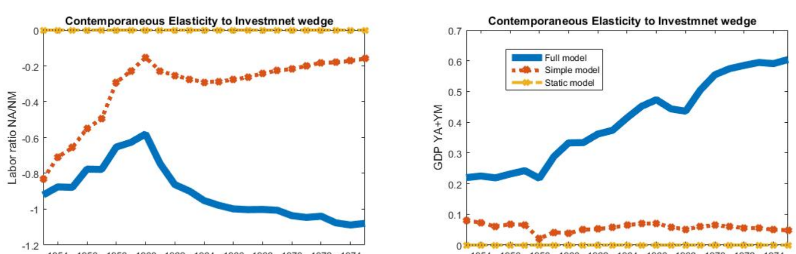

Figure 45: Contemporaneous Elasticity to Investment Wedge over time

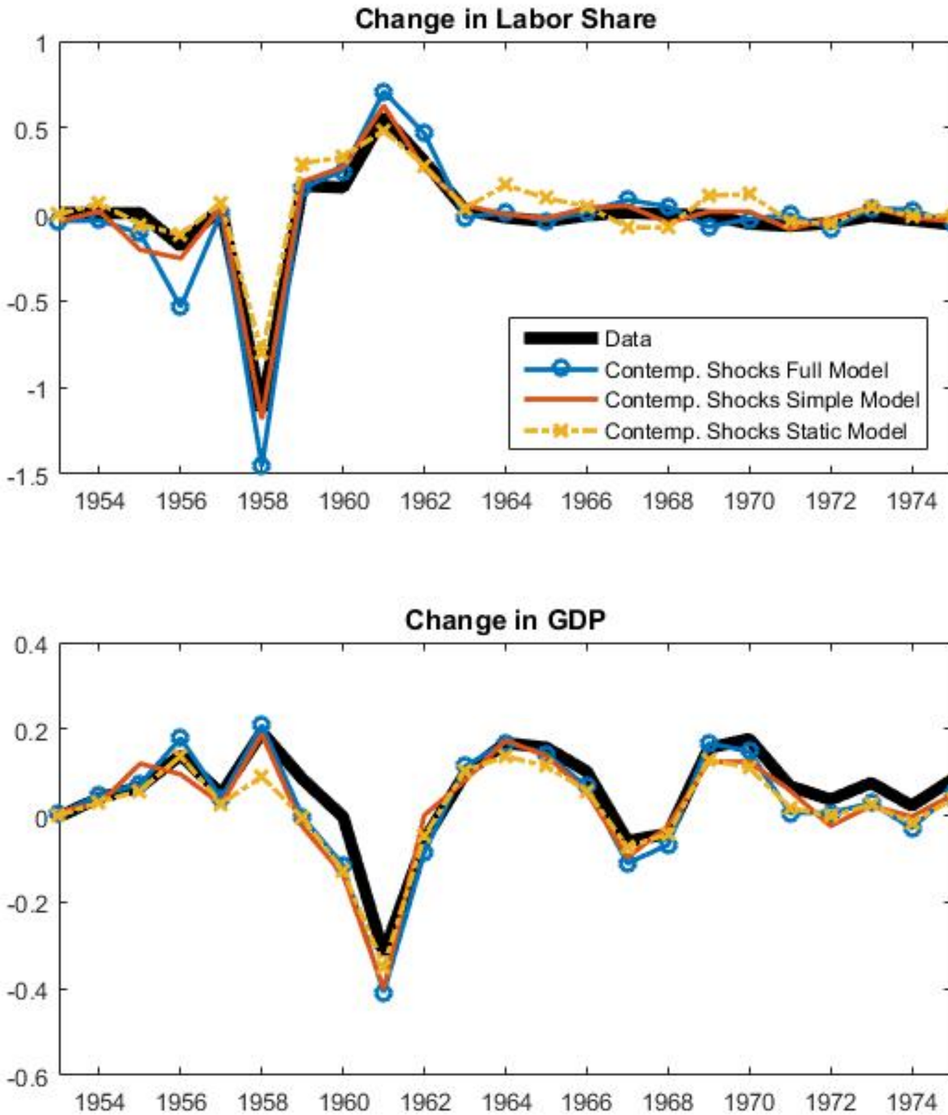

Figure 46: Model Comparison for Contributions of Contemporaneous shocks

5.3 Parameters determining the elasticities

Note first that when all the matrix parameters change with the state of the economy the static model described in Section 4 of this appendix matches the full dynamic effect exactly as shown in the figures below.

As the first illustration, consider the dynamic response (of labor ratio, GDP, investment, capital, consumption and the rental rate) to an agricultural TFP shock. The impulse response of the Chinese economy to a 1 percent agricultural TFP shock in year 1988 is shown in Figure 47 (in solid blue). Here we distinguish 3 components. The static component (solid red) explains about 3/4 of the response of the labor ratio, and most of the response of GDP. The pure static effect predicts that if the agricultural sector becomes more productive, it can produce as much agricultural goods with less labor and capital. Therefore, unused labor and capital are relocated to the manufacturing sector, which produces more manufacturing goods. In the static model, all of the surplus production is consumed contemporaneously. In constrast, in the dynamic economy, the consumer would like to move some of that extra consumption into future periods, so he would increase investment today to make more production and consumption available in future periods. The sum of the static and dynamic smoothing components (dotted yellow) explains most of the dynamics of the labor ratio and GDP. As a consequence, the shock has a large contemporaneous effect but almost no effect on other periods.

The third component comes from the fact that anticipating an increase in productivity, the consumers would choose to disinvest in advance of the shock to face the shock with less capital as the marginal productivity of capital is lower when productivity is higher. This effect is caputred by the static response to the path of capital. Numerically the third component is very small.

The responses to manufacturing TFP and to the consumption wedge shown in the next two Figures display similar patterns and have a similar intuition. A positive shock to manufacturing TFP in a static setting translates one-to-one into relative prices and has no effect on relative labor inputs, leading to proportionally higher production and consumption in both sectors. In a dynamic setting, consumers would like to move some of the extra consumption into future periods by increasing investment. This implies that labor is shifted to the manufacturing sector contemporaneously to support the investment effort. A positive shock to the consumption wedge creates a tax on manufacturing consumption, and artificially lowers the relative prices of agricultural goods. A lower price makes agricultural goods a better bargain, shifts demand towards them, so labor and capital inputs are reallocated towards the agricultural sector as supply follows demand. However, because of the increased tax, overall production and consumption drop. The dynamic effect captures the fact that consumers prefer to distribute that drop in consumption from the current period to future periods, which means disinvestment in the current period. In both of these cases there is a contemporaneous static effect and a contemporaneous consumption smoothing effect, but the effects on adjacent periods are negligible as the anticipation effect is tiny.

The only case in which the anticipation component plays a noticeable role is a shock to the investment wedge, as shown in Figure 50. A positive shock to the investment wedge makes capital transfer into the future cheaper. The consumer prefers to come into the subsidized period with more capital and higher production since that allows him to apply the investment subsidy to a larger stock. In the preceding periods investment is higher, in order to build up capital, so consumption is sacrificed. In the periods that follow the subsidy, the consumer runs down the capital that she had accumulated, and enjoys higher consumption.

To better understand the source of changes in the contemporaneous elasticities we look at a counterfactual exercise using the static model that takes as given investment and capital that we just discussed.

We note that the static linearized model has only a few parameters that enter the matrix of coefficients and change over time, namely $\frac{C_t^A}{C_t^A-\gamma^A}, \frac{N_0^A}{\chi_0 N_0}, \frac{K_0^A}{K_0}, \frac{Y_0^A}{GDP}, \frac{x_0}{1-x_0}, \frac{-s_0 K_0}{C_0^M}, \frac{Y_0^M-G_M^0-s_0 K_0}{C_0^M}, \frac{EX_M^0}{C_0^M}$. To measure the effect of each parameter, we recompute the static effects holding one of those parameres fixed through time at its 1978 value. We find that only the first two (subsistence and labor share in agriculture) as well as the share of GDP in agirculture, change noticeably over time and drive most of the trends in static impulse responses. The counterfactual contemporaneous impulse responses are presented in Figures 51-53.

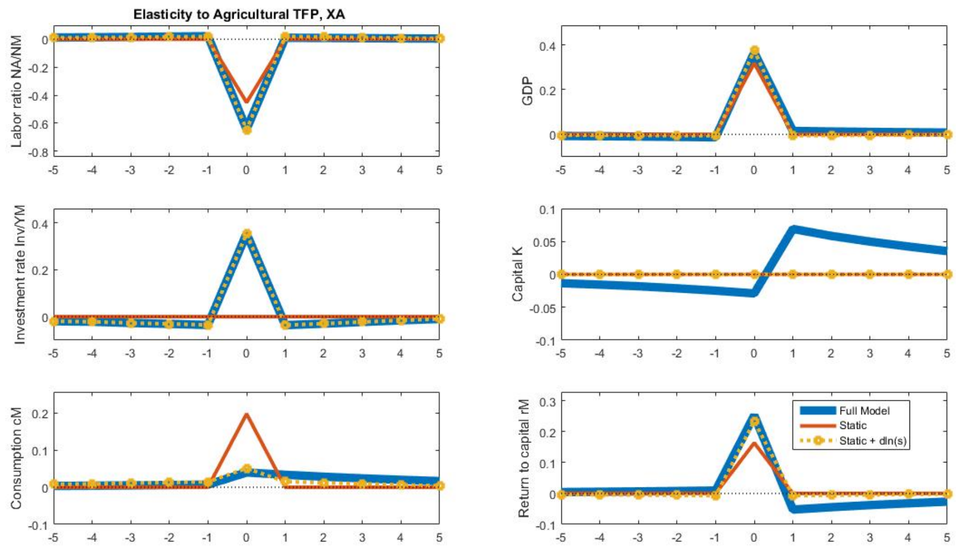

Figure 47: Response to agricultural TFP shock

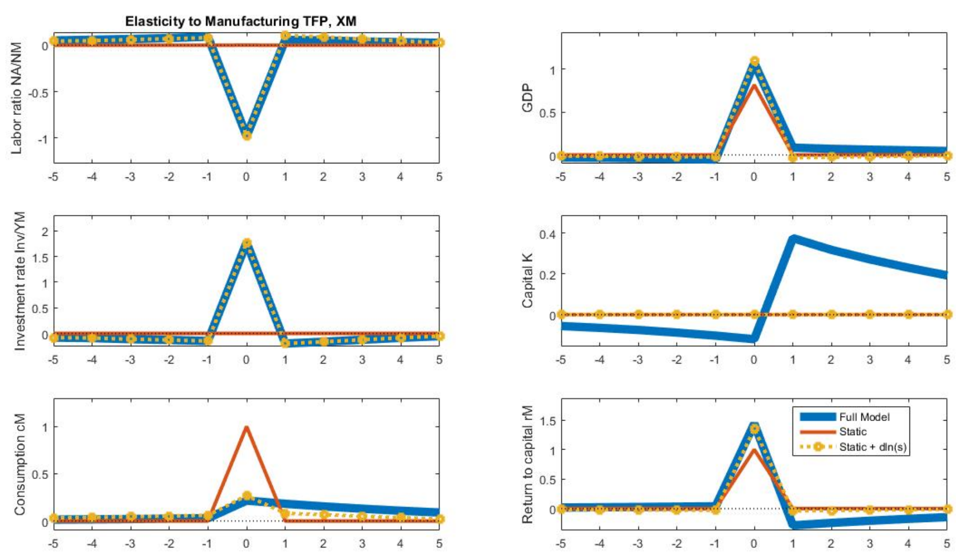

Figure 48: Response to manufacturing TFP shock

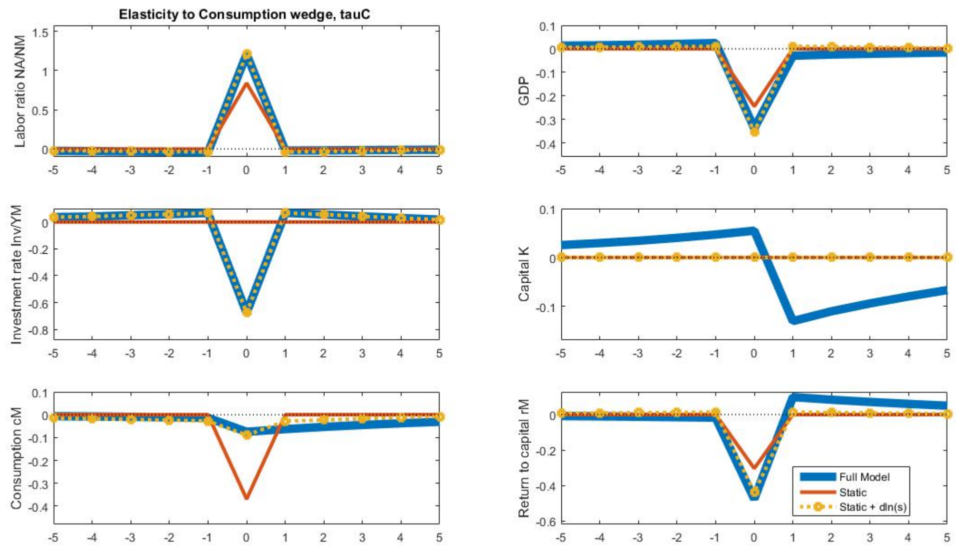

Figure 49: Response to Consumption Wedge shock

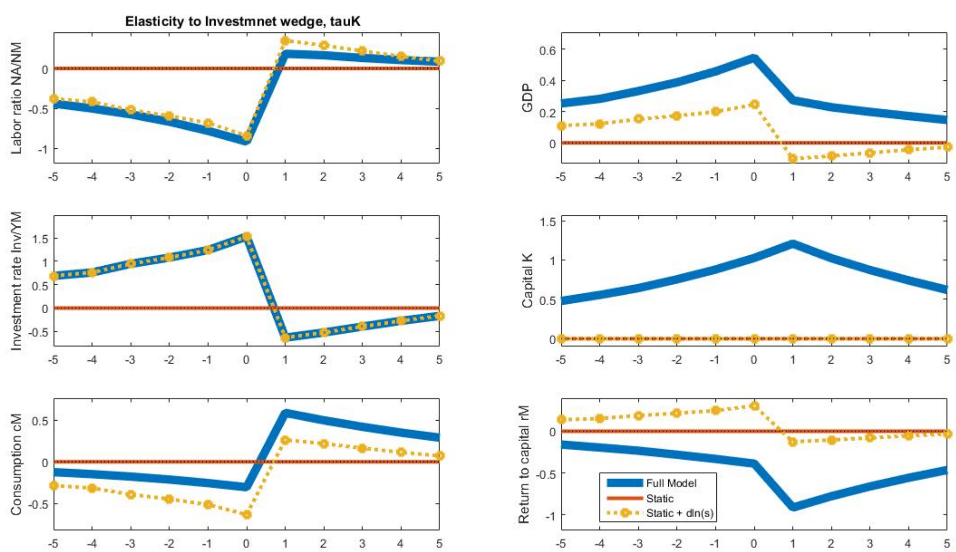

Figure 50: Response to Investment Wedge shock

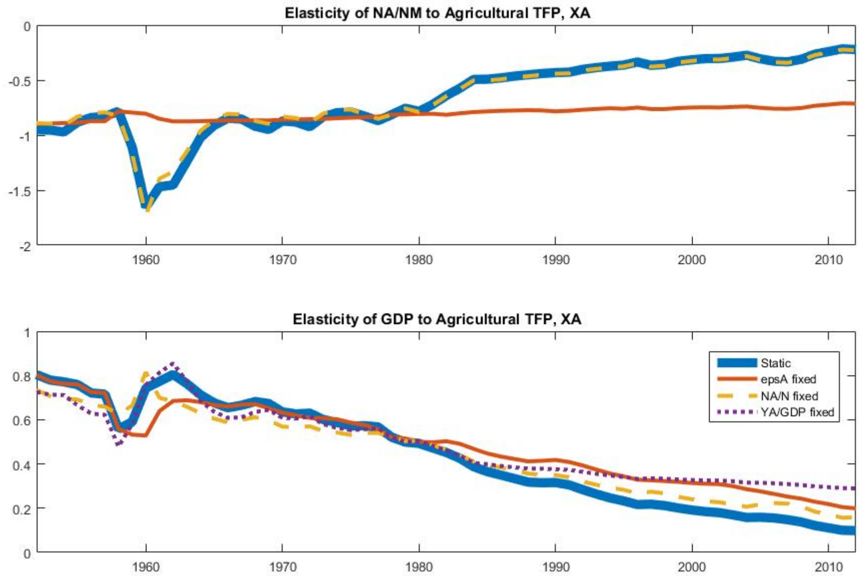

Figure 51: Counterfactual Responses to agricultural TFP shock

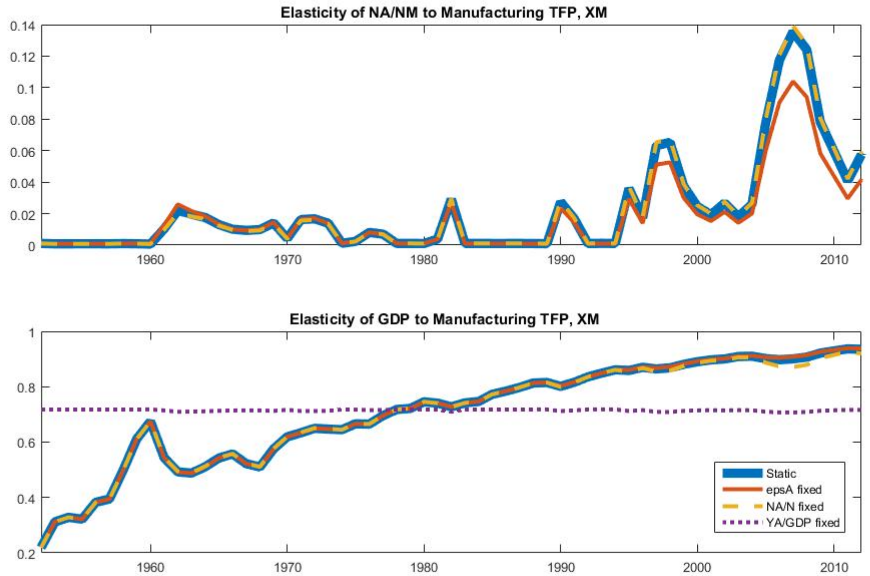

Figure 52: Counterfactual Responses to manufacturing TFP shock

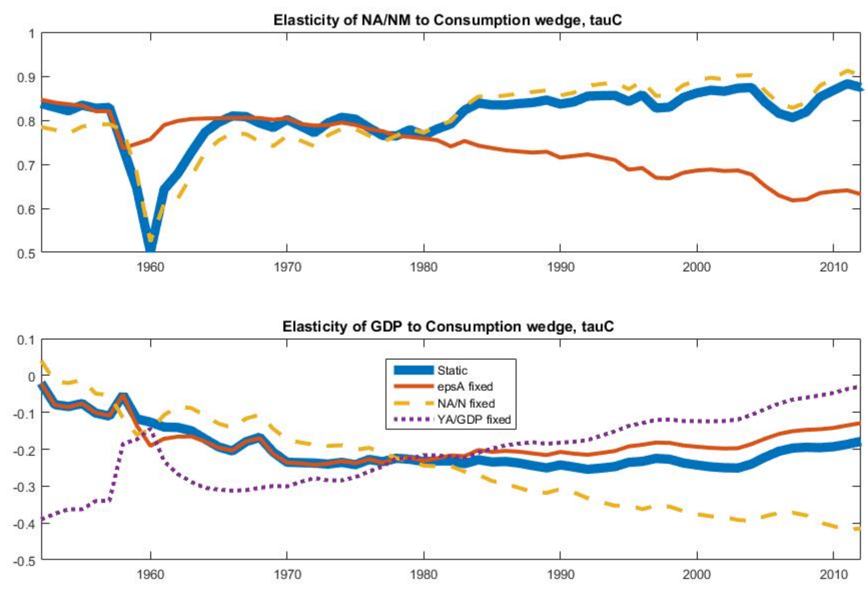

Figure 53: Counterfactual Responses to Consumption Wedge shock

5.4 Contributions 1953-78

We decompose the effects of wedges and TFPs on the Chinese economy for the period 1953-78 using the elasticities described in the previous subsection. We compute the elasticity of responses of labor share and GDP in each period t to changes in each shock j in each period s. For each period t, the total effect on each variable equals the sum of effects of innovations to wedges and TFPs weighted by the elasticities, where the summation could be over all innovations (all s), over contemporaneous innovations ($s = t$), over future innovations ($s > t$) or over past innovations ($s < t$). The contributions to change in labor share are presented in Figures 54-57. The contributions to change in GDP are shown in Figures 58-61.

We find that changes in the labor share are largely driven by movements in the consumption and production components of the labor wedge, which are dramatic during the Great Leap Forward. Both manufacturing and agricultural TFP play a noticeable role over the whole period. Movements in GDP are largely explained by manufacturing and agricultural TFP, with some notable inputs from the components of the labor wedge.

One key observation is that contemporaneous effects explain the bulk of the dynamics in both the labor share and GDP. This is a consequence of contemporaneous elasticities being much bigger than cross-elasticities, as we have seen in the previous subsection. The effects of future shocks play a smaller role and come mostly from the investment wedge and TFP. The effects of past shocks play a minor role.

We can now also compute a running sum of the effects on labor share and GDP, which measures the effects of changes in wedges and TFPs on the change in labor share and GDP from 1953 to any period t. These are shown in Figures 62-63. These accumulated contributions are akin to counterfactual exercises that measure what would have happened if one exogenous variable, such as a wedge or TFP, remained fixed throughout the period. The difference is that in a counterfactual simulation the effects of shocks in period s on capital in period t would be compounded and counted multiple times, which makes the sum of contributions differ from the total. The methodology we present here explicitly accounts for cross-effects of shocks. Consequently, the running sum of accumulated contributions from different wedges on labor share and GDP for each period equals the change in labor share or GDP in the data.

We find that the contribution of components of the labor wedge to GDP and labor share is large during the GLF period, but diminishes later on. The effects of manufacturing and agricultural TFP play a large role. The investment wedge is also quantitatively important towards the end of the period as the effects of investment subsidies of the mid-1970s kick in. The anticipation of these subsidies starts affecting the economy well in advance of the actual changes as capital stock is built up to take full advantage of the subsidies when they take effect.

5.5 Contributions 1978-2012

Similarly, we present here briefly, the effects of shocks on the Chinese economy for the period 1978-2012. Period-by-period contributions are shown in Figures 64-65. Accumulated contributions are shown in Figures 66-67.

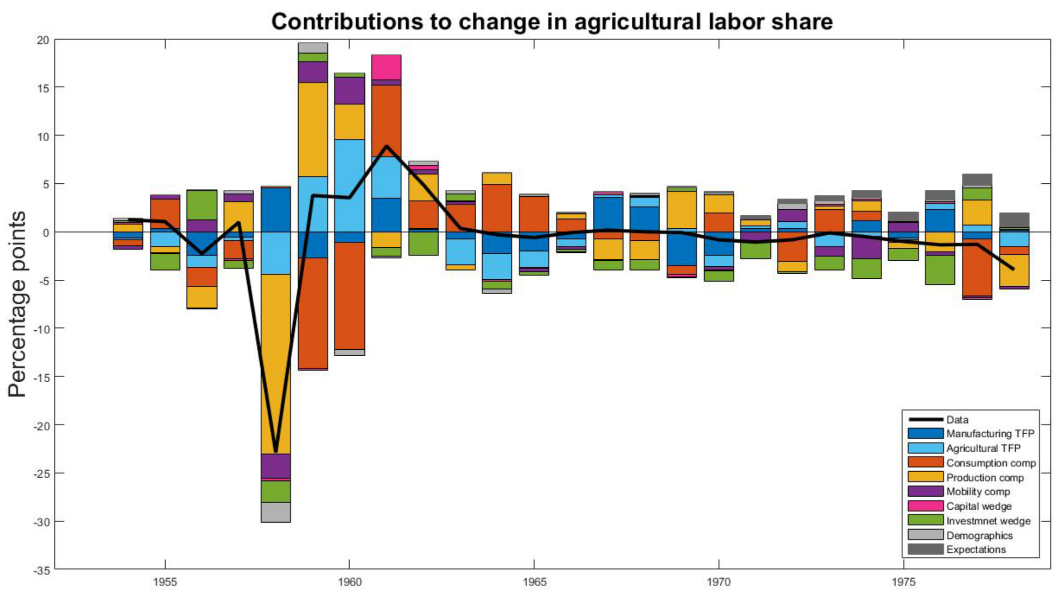

Figure 54: Total Contributions to Changes in Labor Share 1953-78

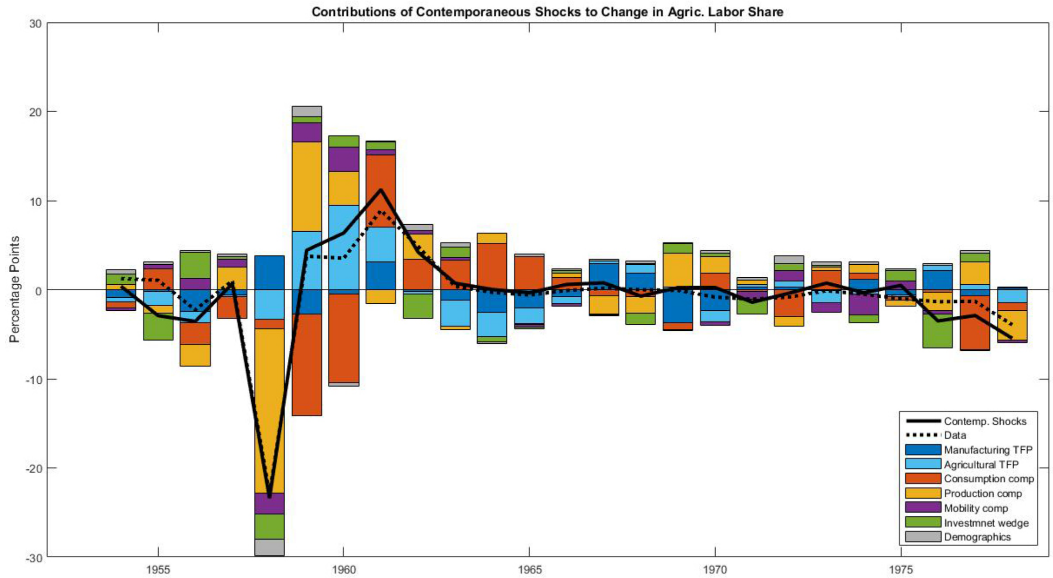

Figure 55: Contributions of Contemporaneous Shocks to Changes in Labor Share 1953-78

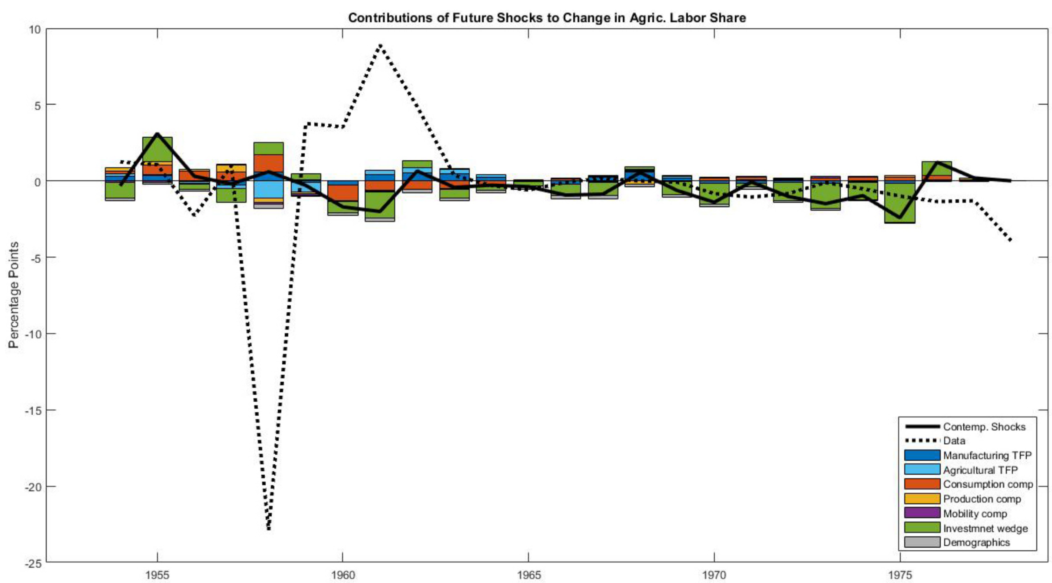

Figure 56: Contributions of Future Shocks to Changes in Labor Share 1953-78

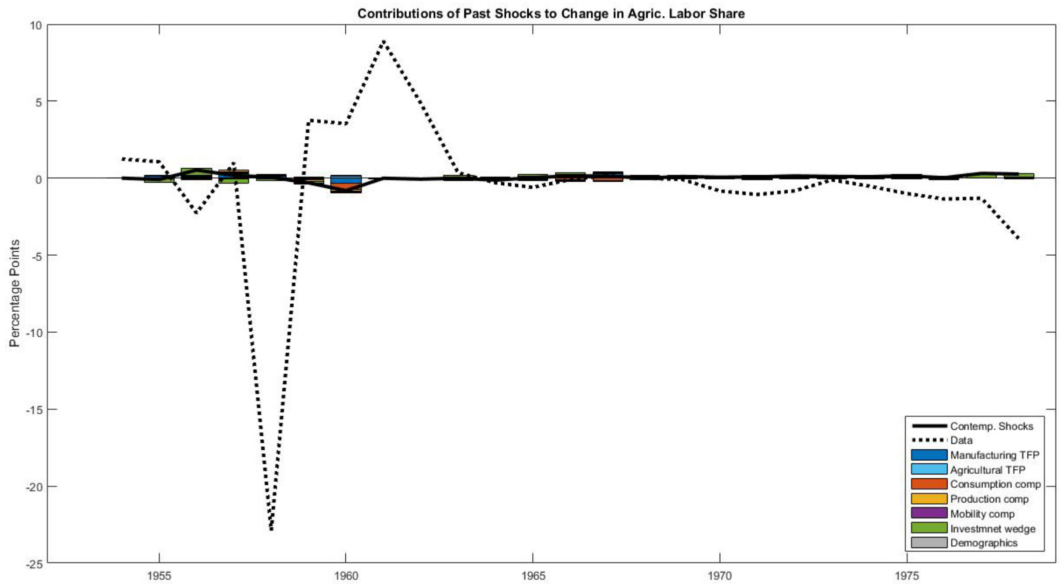

Figure 57: Contributions of Past Shocks to Changes in Labor Share 1953-78

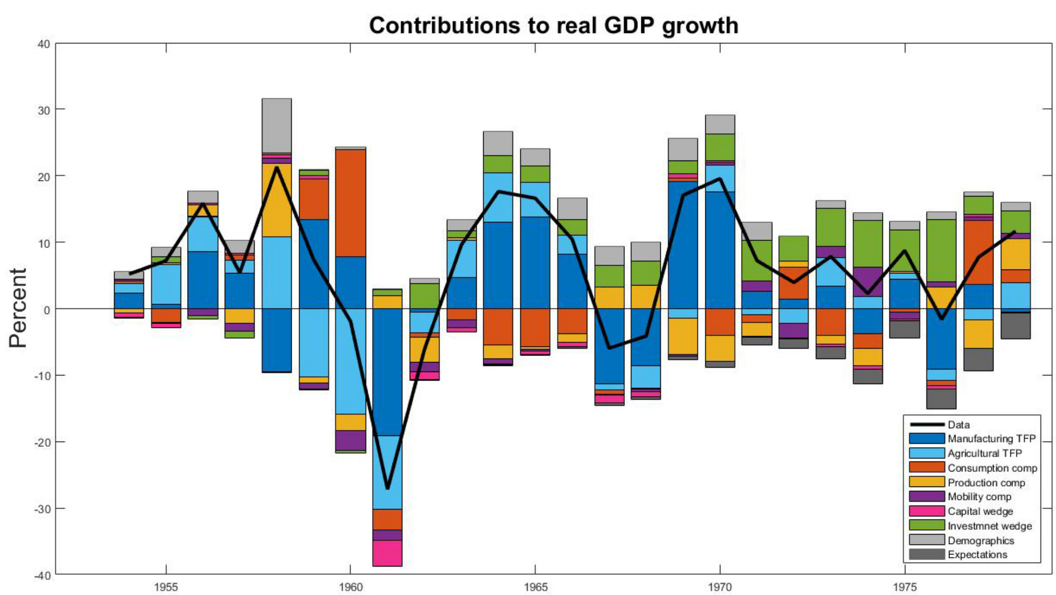

Figure 58: Total Contributions to Changes in GDP 1953-78

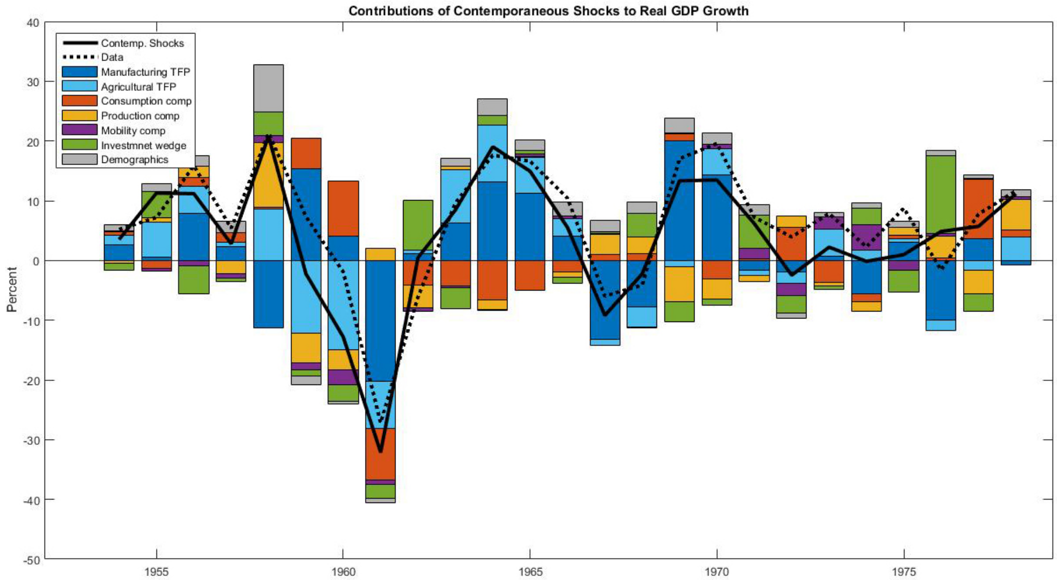

Figure 59: Contributions of Contemporaneous Shocks to Changes in GDP 1953-78

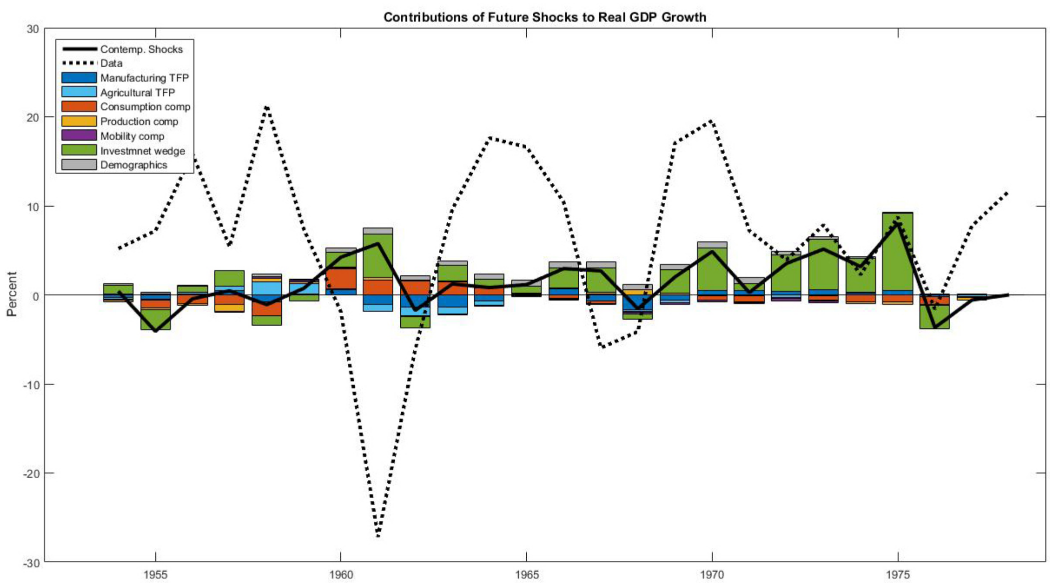

Figure 60: Contributions of Future Shocks to Changes in GDP 1953-78

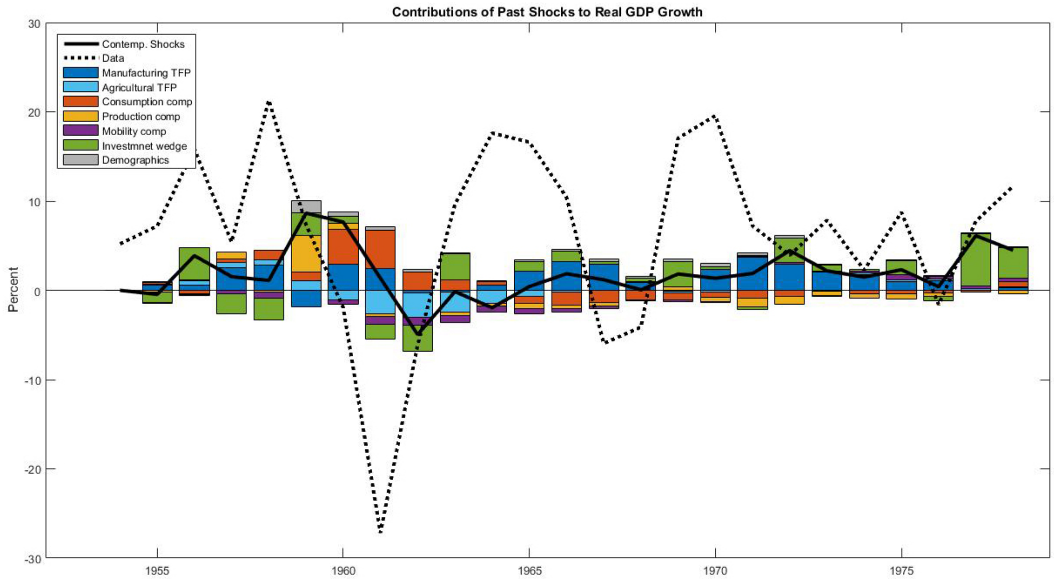

Figure 61: Contributions of Past Shocks to Changes in GDP 1953-78

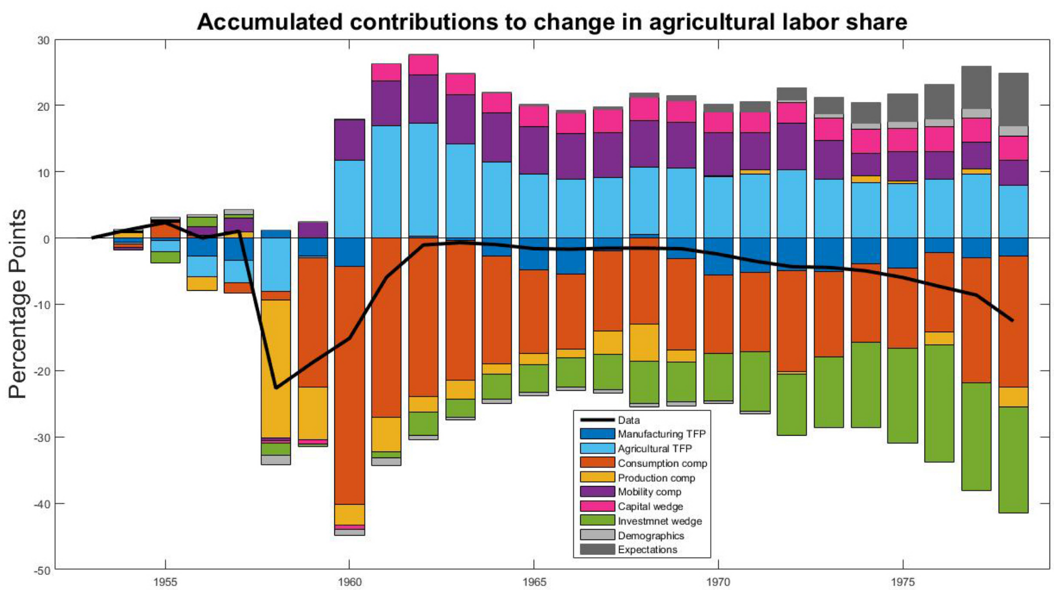

Figure 62: Accumulated Contributions to Change in Labor Share 1953-78

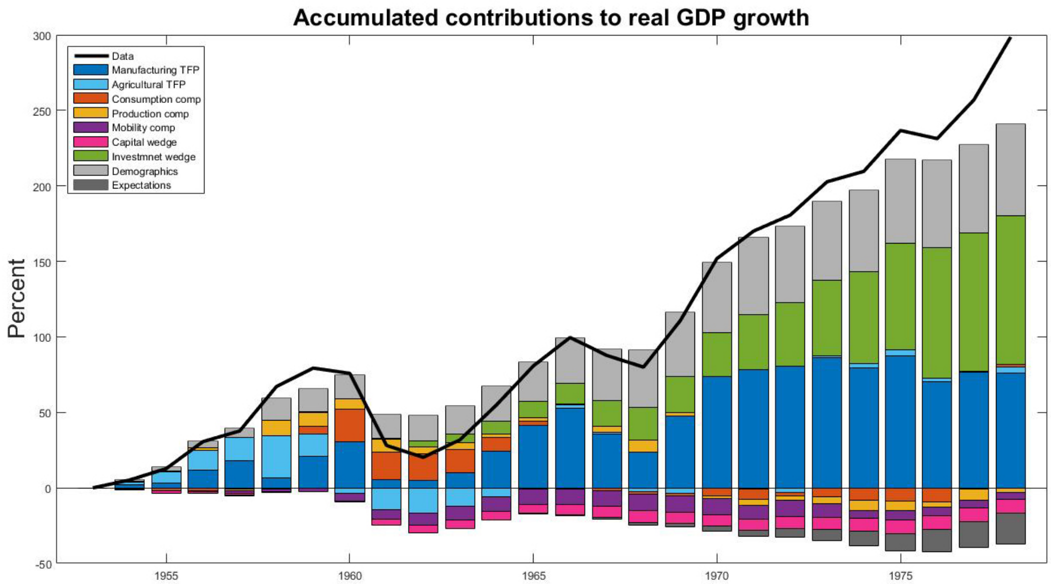

Figure 63: Accumulated Contributions to Change in GDP 1953-78

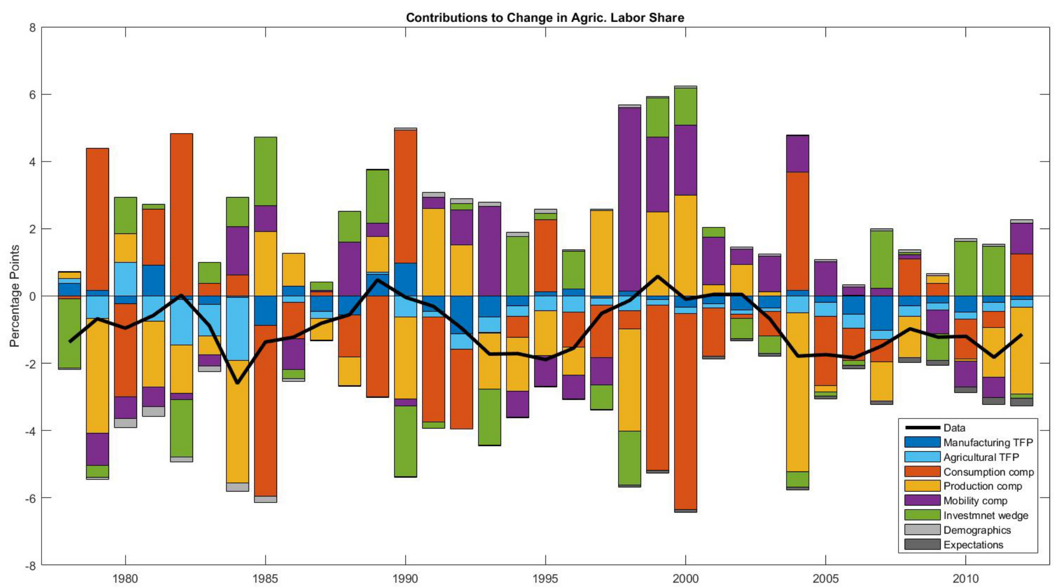

Figure 64: Contributions to Changes in Labor Share 1978-2012

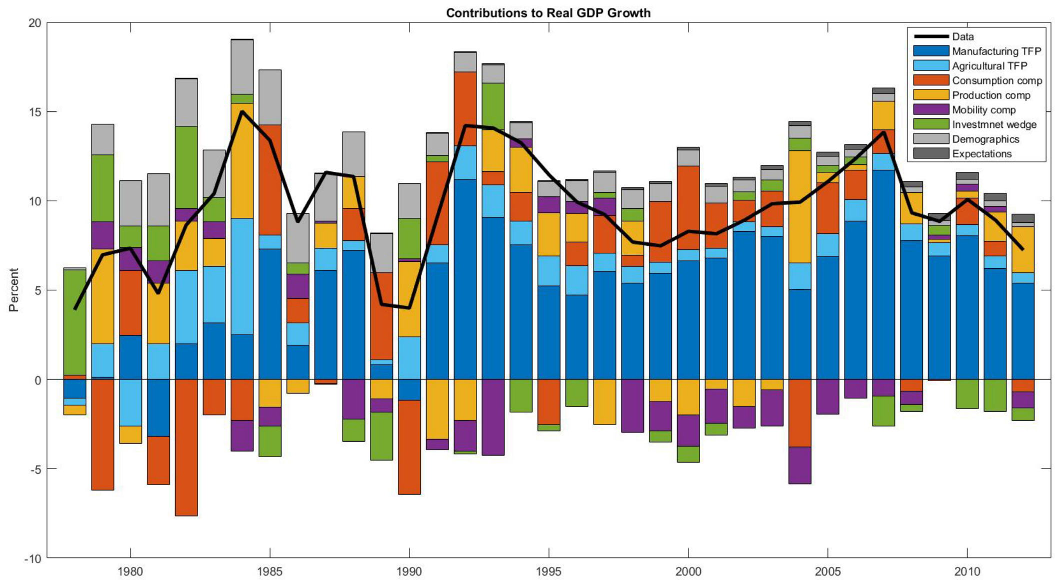

Figure 65: Contributions to Changes in GDP 1978-2012

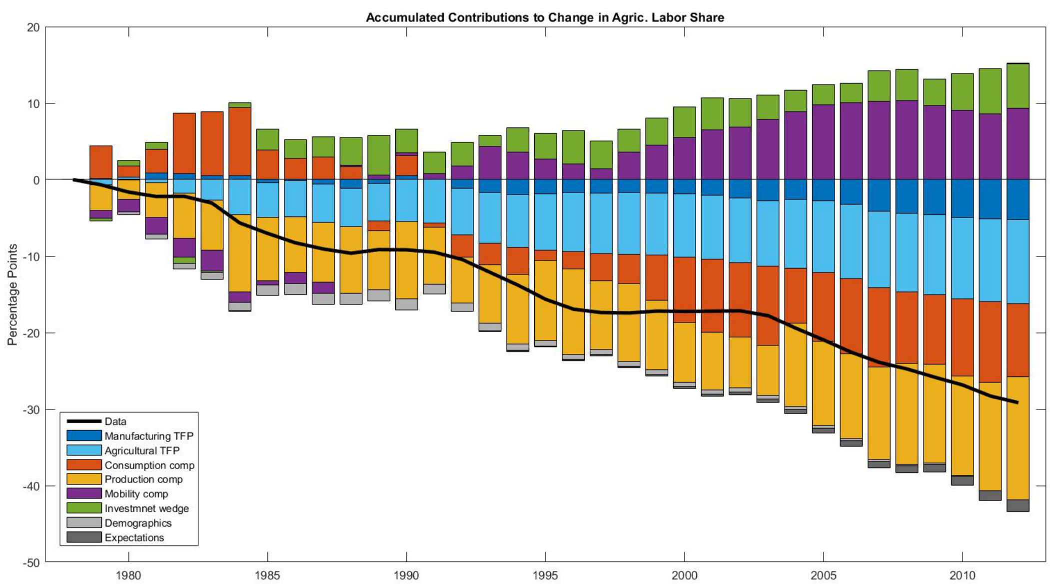

Figure 66: Accumulated Contributions to Change in Labor Share 1978-2012

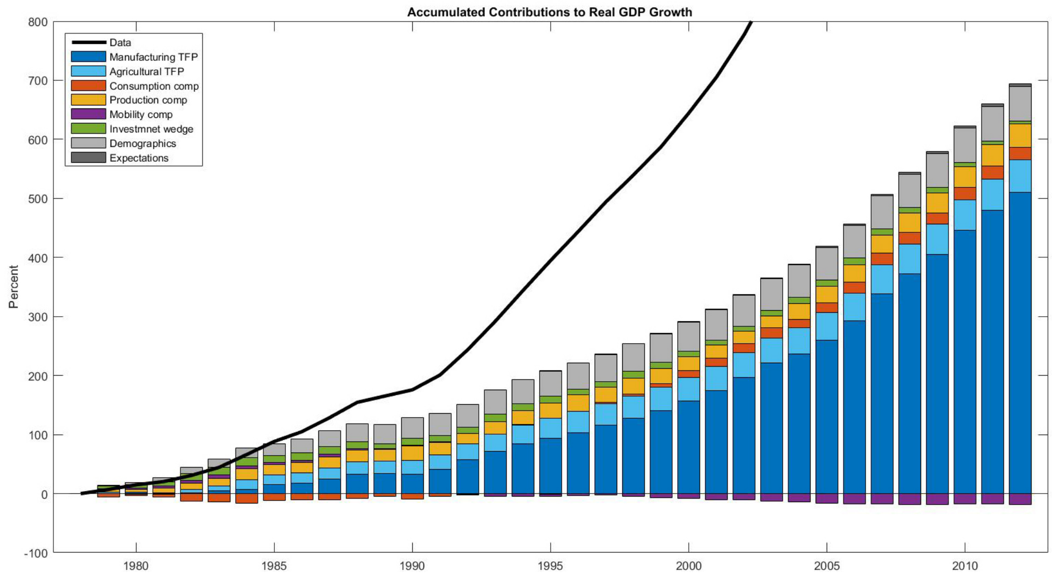

Figure 67: Accumulated Contributions to Change in GDP 1978-2012

5.6 Integral Elasticities and Analysis of policies

In this section, we analyze policies which may explain changes in wedges, and quantify their economic effects.

Figures 68 and 69 repeat the information in Figures 54 and 58 but instead of the effect of all years's wedges on a particlar value of labor share, now we presents the integral effects of the change in each wedge in a particular on the labor share and GDP. We see that year-by-year the investment wedge moves around a lot and its integral contributions often switch sign.

We use the integral elasticities to describes the integral effects of individual policies which we present in chronological order in Table 33. We report the short descriptions of policies, which wedges were affected, by how much, the integral elasticities and the integral effects on economic variables.

Figure 70 gives a visual representation of changes in wedges corresponding to Table 33, with numbers in the Figure indicating the row in the Table each bar corresponds to.

Figures 71-72 show the integral effects of policies on the labor share and GDP respectively. We find that our methodology gives a simple, almost back-of-the-envelope method for computing the effects of a specific policy in a specific timeframe on the performance of the economy. We find that the quantitatively largest single-policy effects came from shortage of agricultural goods due to state procurement of grain and from the inefficiencies associated with the poor management of the commune. The massive closure of industrial projects especially that associated with the Sino-soviet split also had a huge negative impact.

Description of policy	period	wedges	change	elst. LSh	elst. GDP	effect LSh	effect GDP
1. transfer of soviet technology and advisors, advanced machinery and capital imported, management with personal responsibility.	52-57	X^M	+0.306	-0.075	0.79	–2.3 pp	+27.3%
2. collectivization, irrigation, multiple cropping, afforestation, improved seeds, and fertilization, consolidation of land plots	52-58	X^A	+0.290	-0.19	0.898	–5.5 pp	+29.7%
3. allocation of resources to production of capital goods	53-57	τ^K	–0.074	-0.352	1.479	+2.6 pp	–10.4%
4. high priority of heavy industry	52-55	τ^R	–0.332	-0.037	0.124	+1.2 pp	–4.0%
5. hukou introduced	55-57	τ^M	+0.124	0.232	-0.332	+2.9 pp	–4.0%
6. poor management in the commune, diversion of productive resources from agriculture, excessive procurement of grain worsend incentives	58-61	X^A	–0.574	-0.221	0.93	+12.7 pp	–41.4%
7. markets curtailed, money prohibited shortage of materials, backyard furnaces	58-59	X^M	–0.002	-0.012	1.205	0.0 pp	–0.2%
8. shortage of agric goods due to state procurement and price distortion	58-60	τ^C	–1.35	0.135	-0.273	–18.2 pp	+44.6%
	58-59	τ^P	–0.77	0.177	-0.408	–13.6 pp	+36.9%
9. population reallocation during GLF	57-62	τ^M	+0.203	0.174	-0.396	+3.5 pp	–7.7%
10. massive closure of industrial projects	58-62	τ^K	+0.193	-0.33	2.15	–6.4 pp	+51.4%
	58-60	τ^R	+0.357	-0.044	0.136	–1.6 pp	+5.0%
11. sino-soviet split, departure of advisors	60-61	X^M	–0.263	-0.06	0.947	+1.6 pp	–22.0%
12. refocusing of projects and revival of material incentives	62-66	X^M	+0.495	-0.064	0.96	–3.2 pp	+60.8%
13. revival of material incentives, decentralization of commune agriculture first: reopening of private plots	62-66	X^A	+0.319	-0.27	1.02	–8.6 pp	+38.5%
14. shortages eliminated	61-63	τ^C	+0.977	0.156	-0.286	15.2 pp	-24.4%
15. procurement and price distortions removed	59-65	τ^P	+0.701	0.18	-0.442	12.6 pp	-26.6%
16. Agriculture first	61-65	τ^R	–0.773	-0.037	0.131	2.9 pp	-9.6%
17. price scissors introduced	64-75	τ^C	+0.471	0.154	-0.422	7.3 pp	-18.0%
18. worker strikes	67-68	X^M	–0.301	-0.05	1.05	1.5 pp	-27.1%
19. red guards	67-69	X^A	–0.07	-0.19	0.89	1.3 pp	-6.0%
20. resettlement and movement of urban youth to villages	66-70	τ^M	–0.035	0.201	-0.54	-0.7 pp	1.9%
21. third front massive construction	66-70	τ^K	–0.022	-0.553	3.35	1.2 pp	-7.1%
	66-70	τ^R	–0.114	-0.033	0.136	0.4 pp	-1.5%
22. relaxed control of migration	71-78	τ^M	–0.097	0.178	-0.62	-1.7 pp	6.2%

Table 33: Effects of specific policies on TFP, wedges, labor share and GDP, 1953-75

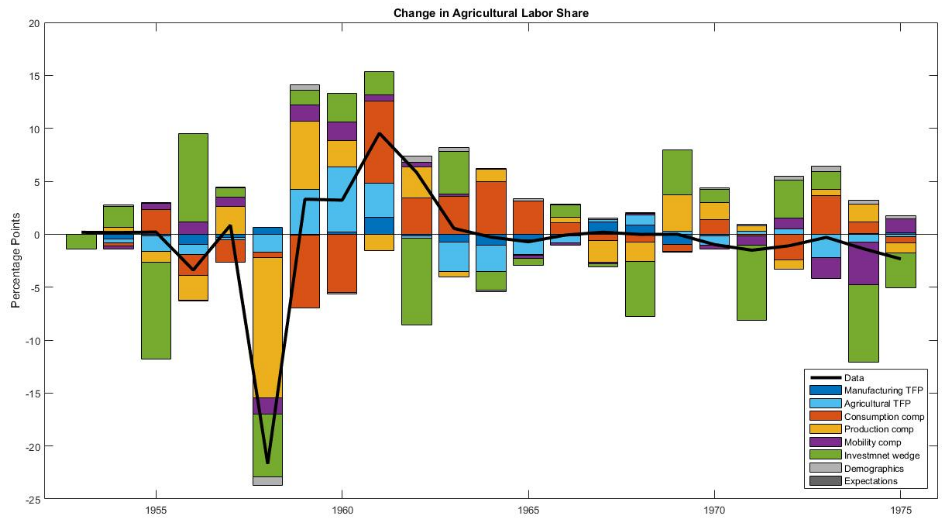

Figure 68: Integral contributions of shocks by wedge by year

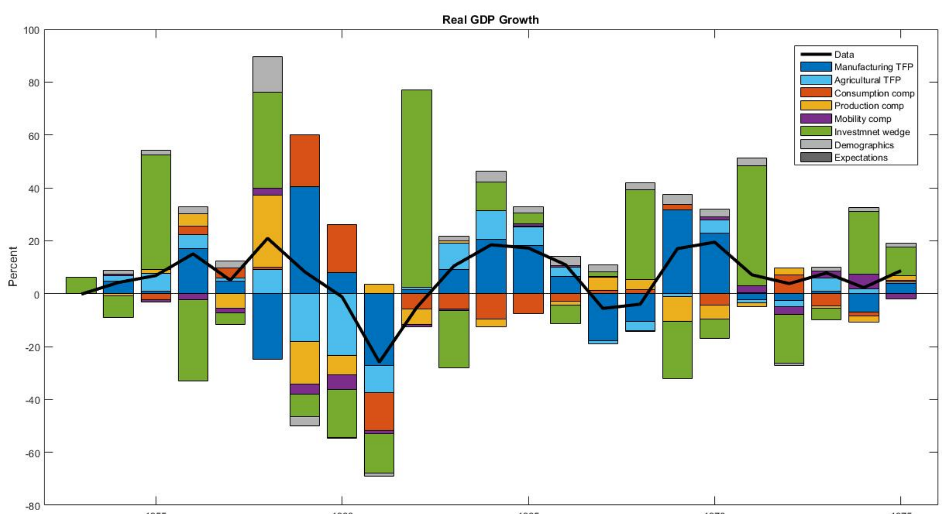

Figure 69: Integral contributions of shocks by wedge by year

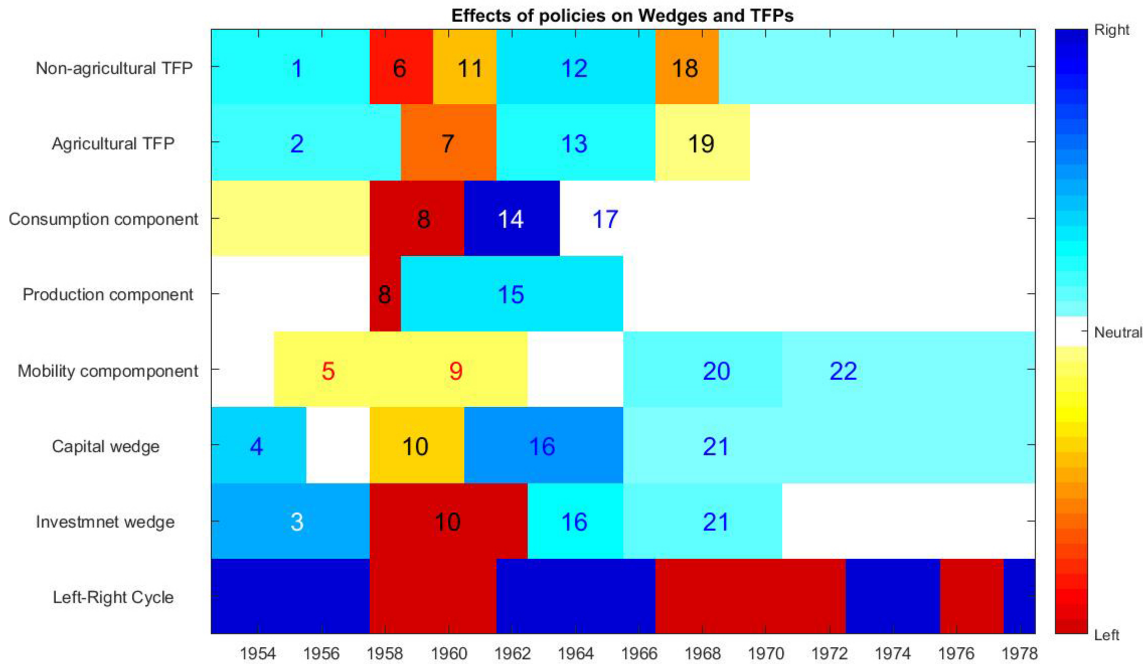

Figure 70: Effects of policies on GDP

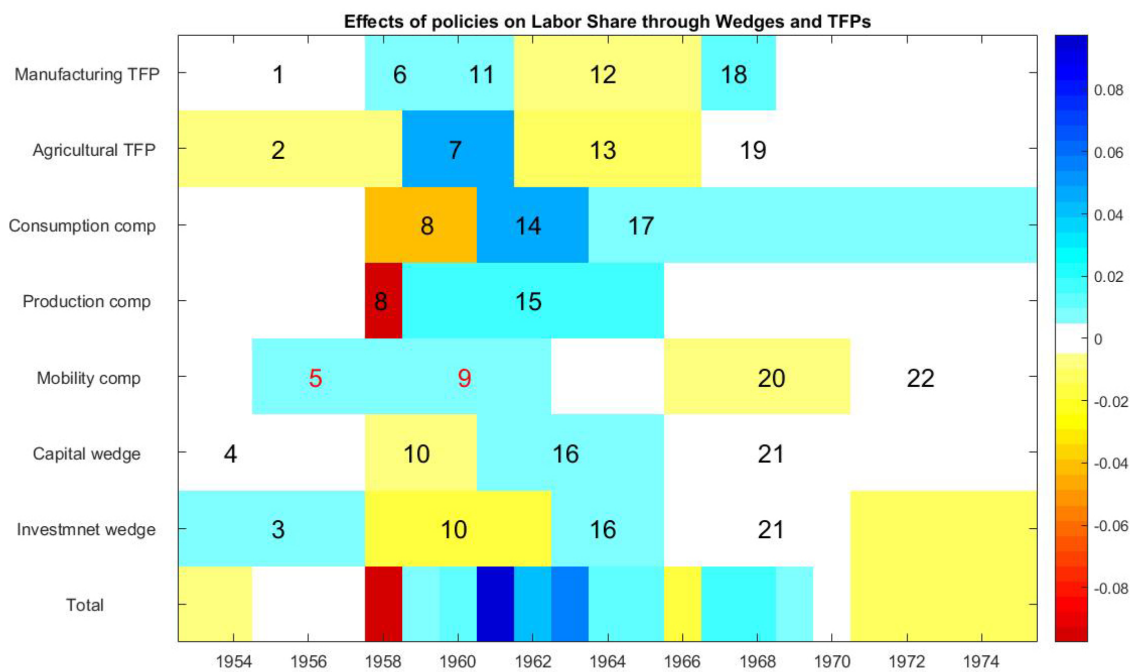

Figure 71: TFPs and wedges versus Ideology

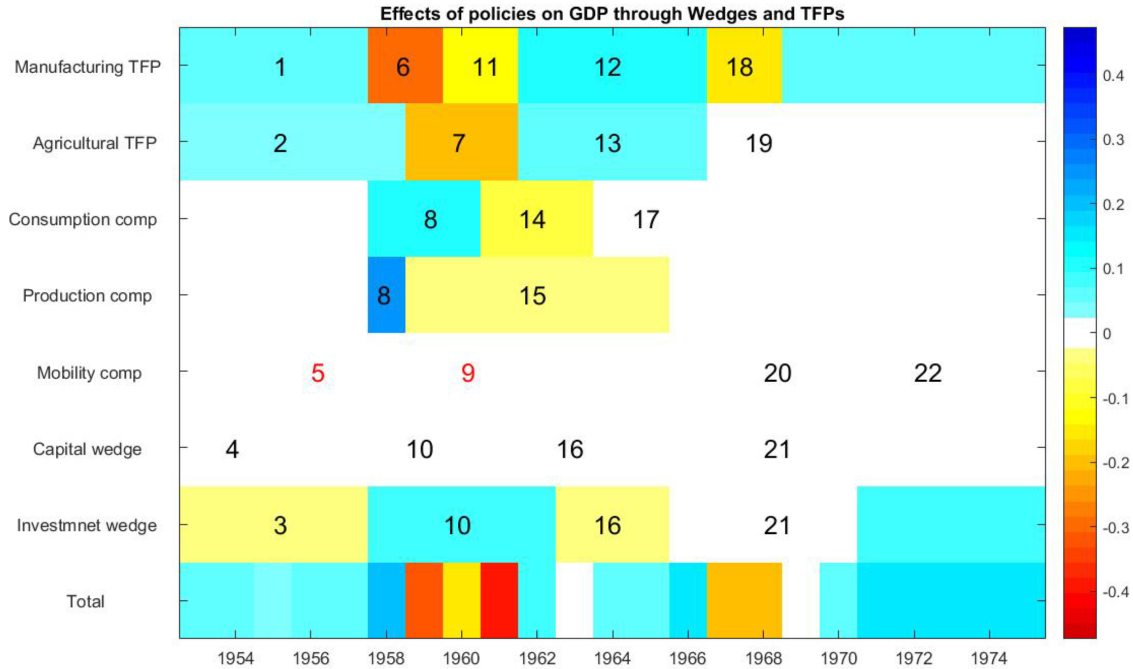

Figure 72: Effect of policies on labor share

6 Sensitivity Analysis

6.1 Elasticities

To see how the responses depend on the parameters, we take the impulse responses for e.g. year 1970 and use the closed-form solution from Section 5.3 of this appendix to compute impulse responses when only one of the key parameters changes. The list of parameters is: $\epsilon_A, \epsilon^M, z^A, y^A, \beta_A, \beta_M, \alpha_A, \alpha_M$. It seems that only ϵ_A and $z^A = N_0^A / (\chi_0 N_0)$ have a substantial influence on the results for most wedges. The responses to the investment wedge are also affected by other parameters a little bit. Overall, we find that the elasticities are robust to most of the parameters of the model, and only wild changes to two key parameters, the distance from subsistence, and the initial labor share in agriculture, can induce noticeable changes in the elasticities.

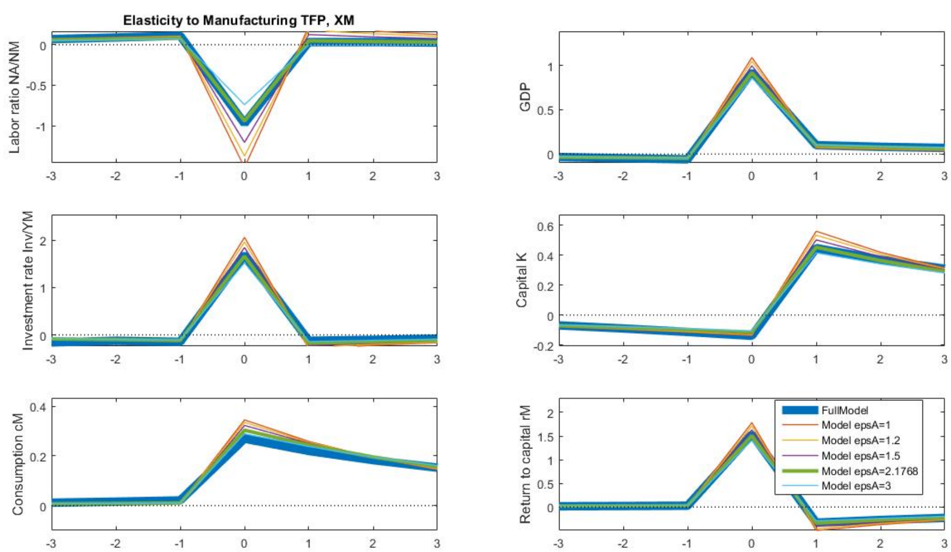

Figure 73: Response to Manufacturing TFP shock

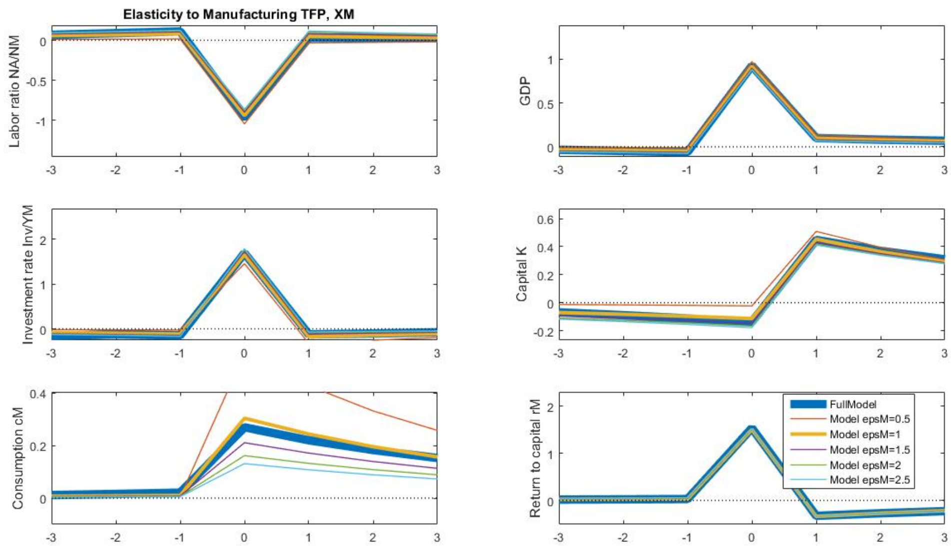

Figure 74: Response to Manufacturing TFP shock

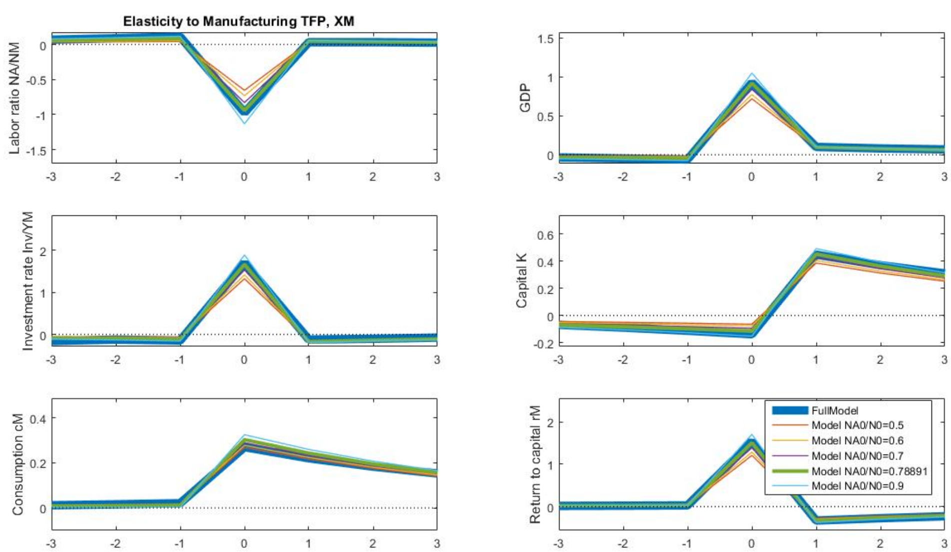

Figure 75: Response to Manufacturing TFP shock

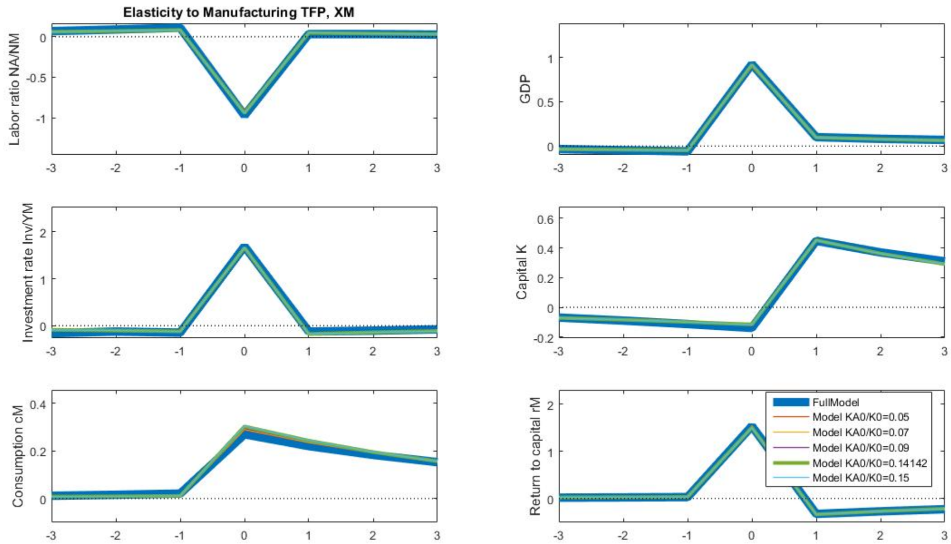

Figure 76: Response to Manufacturing TFP shock

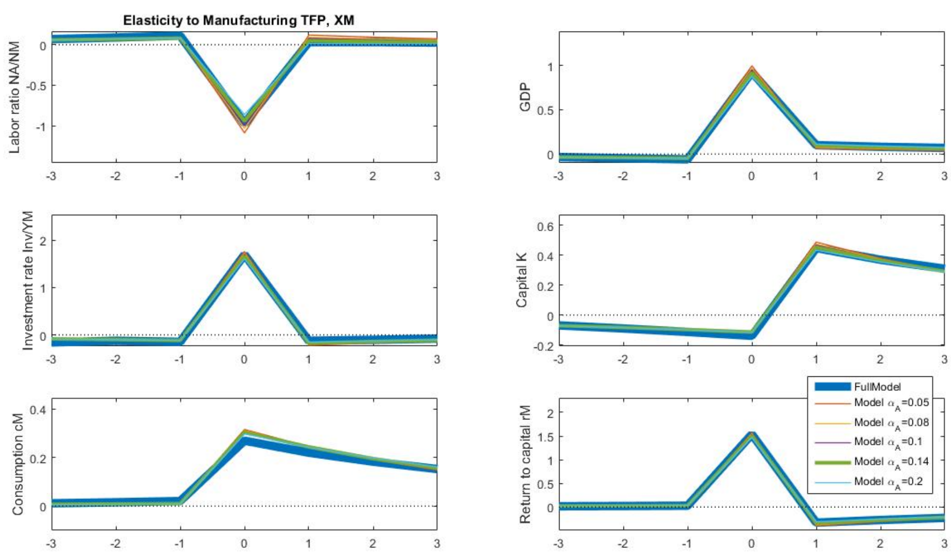

Figure 77: Response to Manufacturing TFP shock

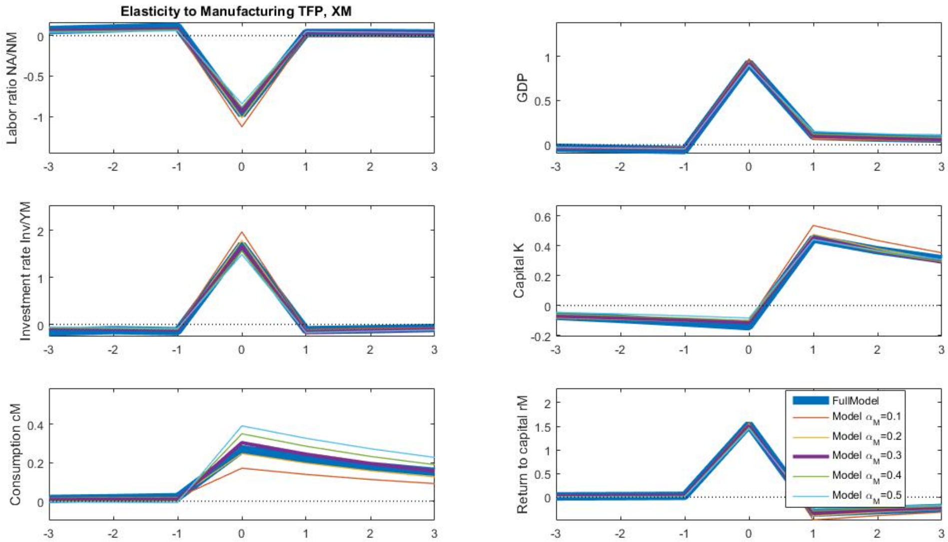

Figure 78: Response to Manufacturing TFP shock

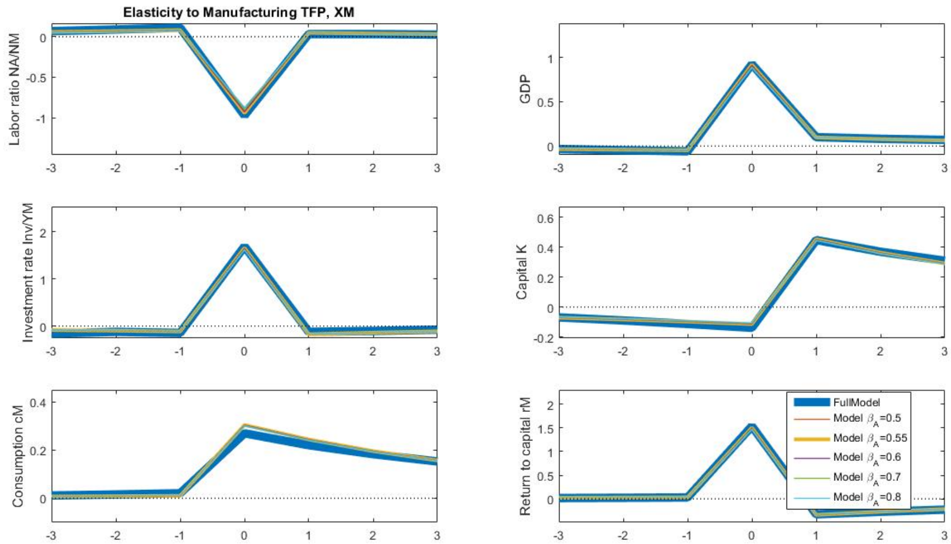

Figure 79: Response to Manufacturing TFP shock

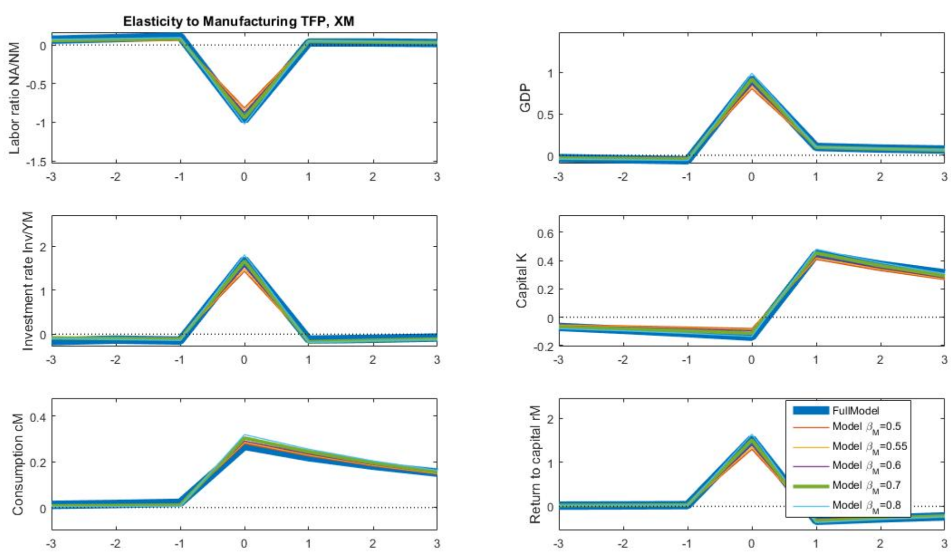

Figure 80: Response to Manufacturing TFP shock

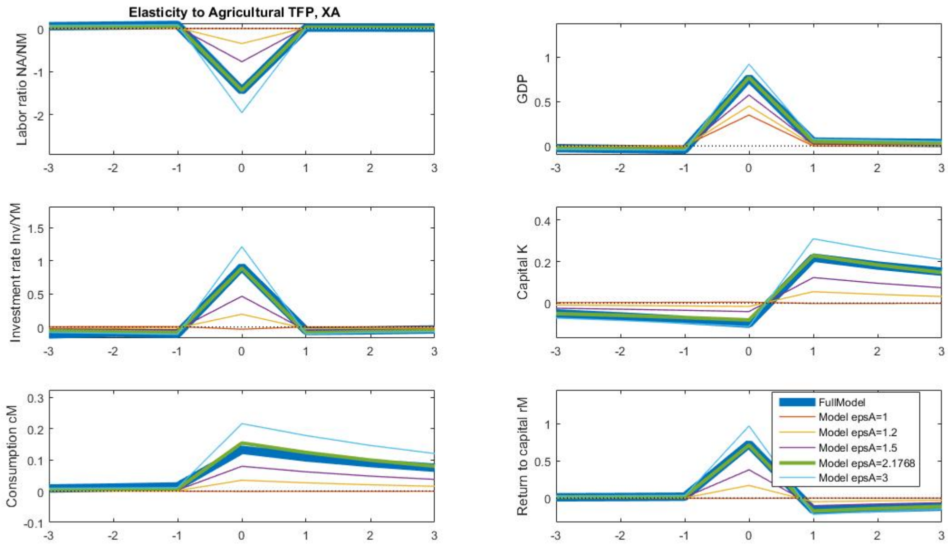

Figure 81: Response to Agricultural TFP shock

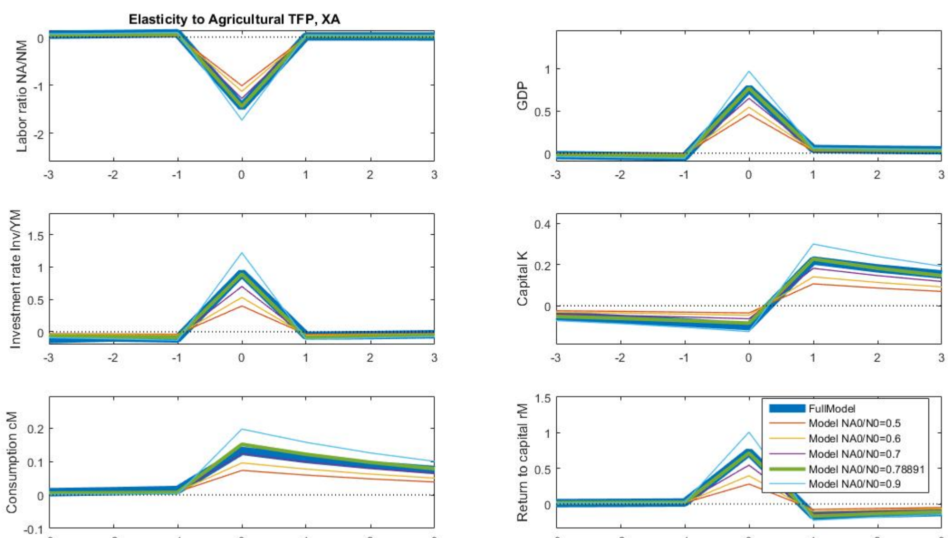

Figure 82: Response to Agricultural TFP shock

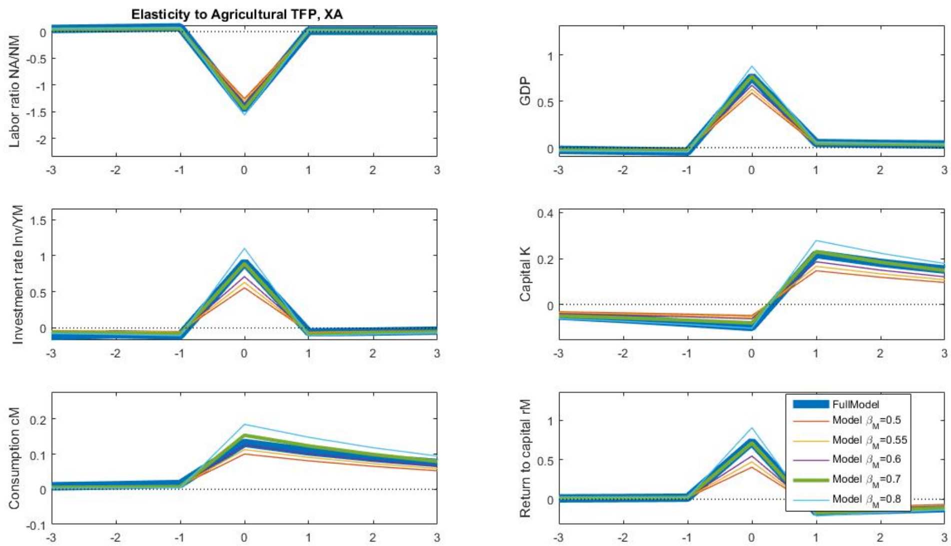

Figure 83: Response to Agricultural TFP shock

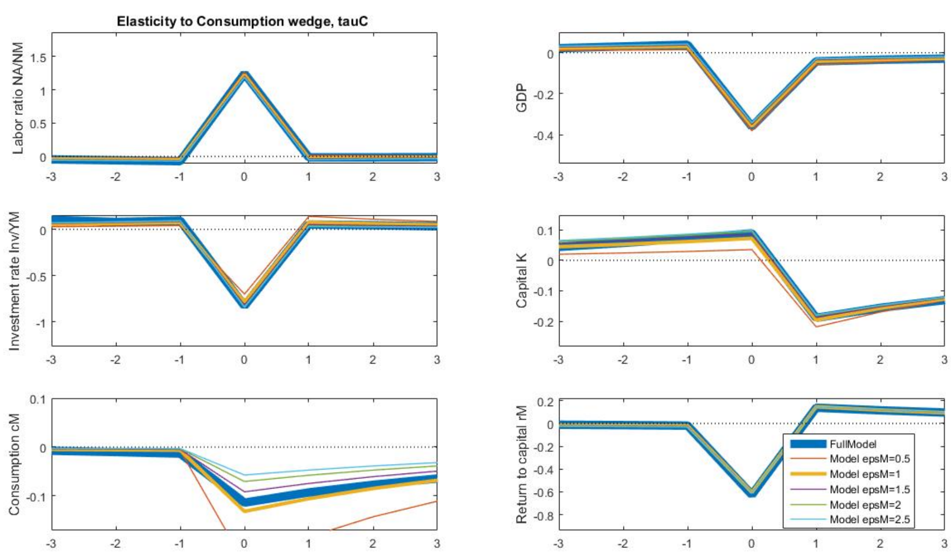

Figure 84: Response to Consumption Wedge shock

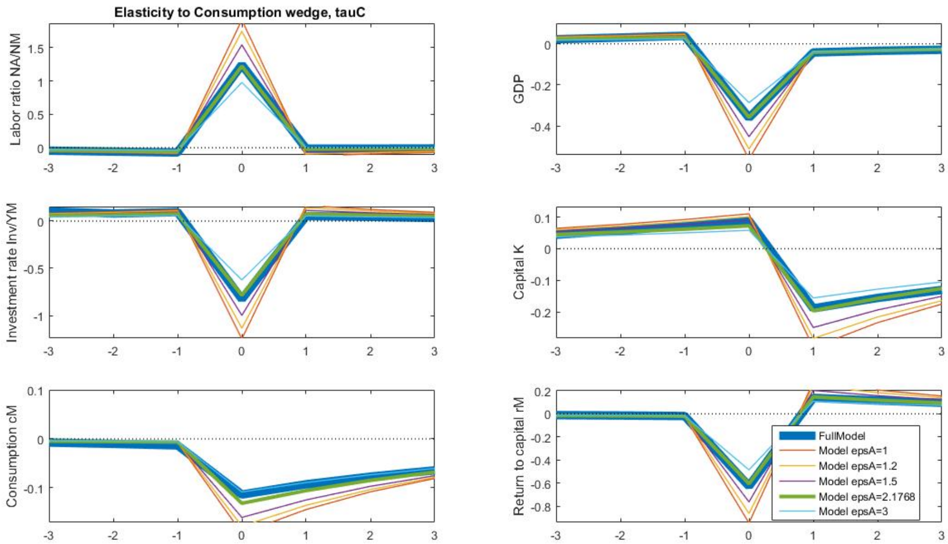

Figure 85: Response to Consumption Wedge shock

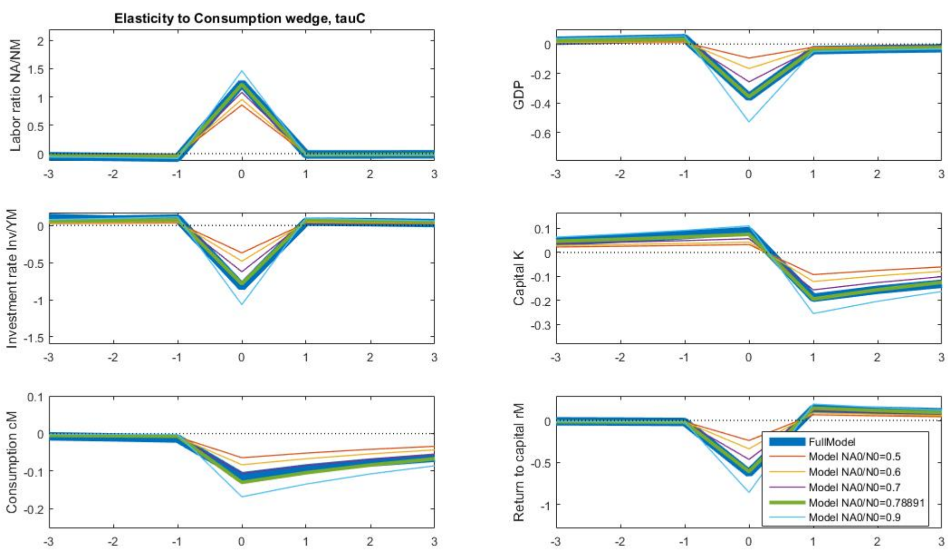

Figure 86: Response to Consumption Wedge shock

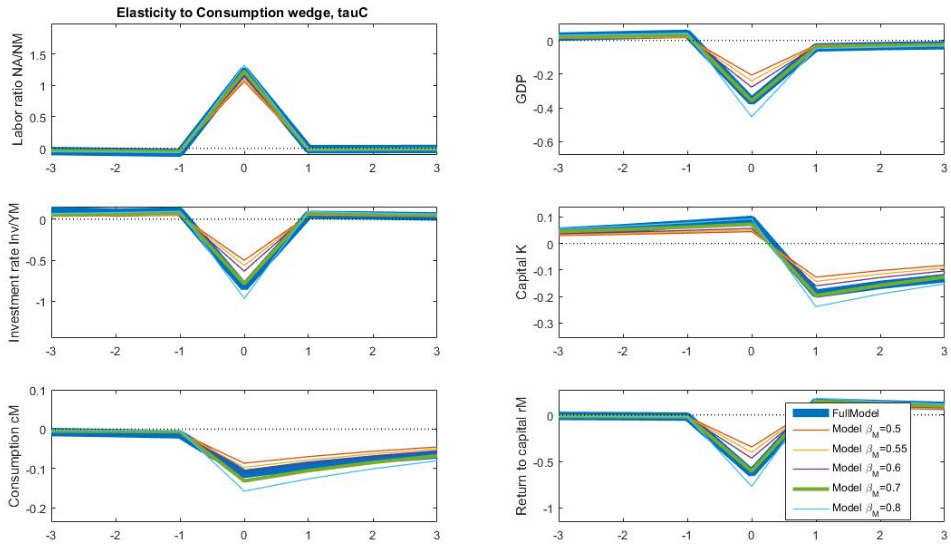

Figure 87: Response to Consumption Wedge shock

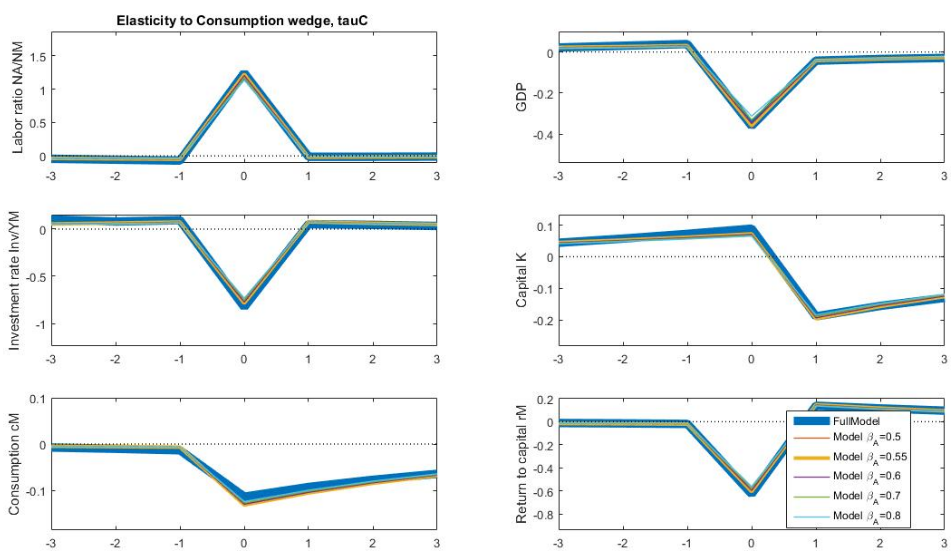

Figure 88: Response to Investment Wedge shock

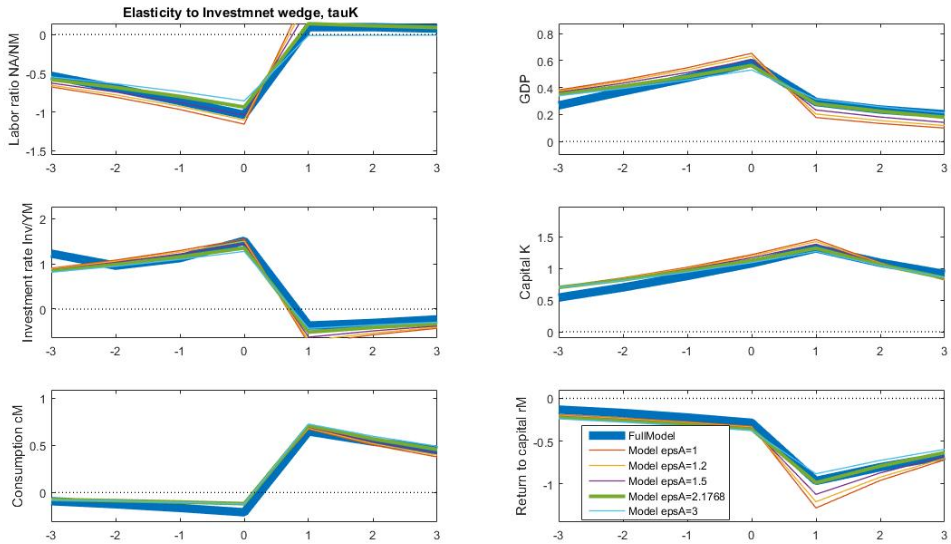

Figure 89: Response to Investment Wedge shock

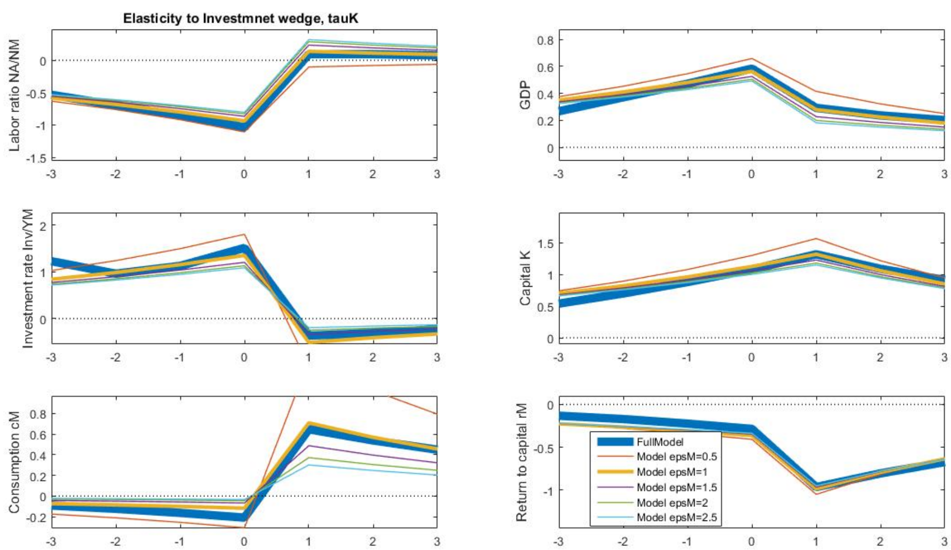

Figure 90: Response to Investment Wedge shock

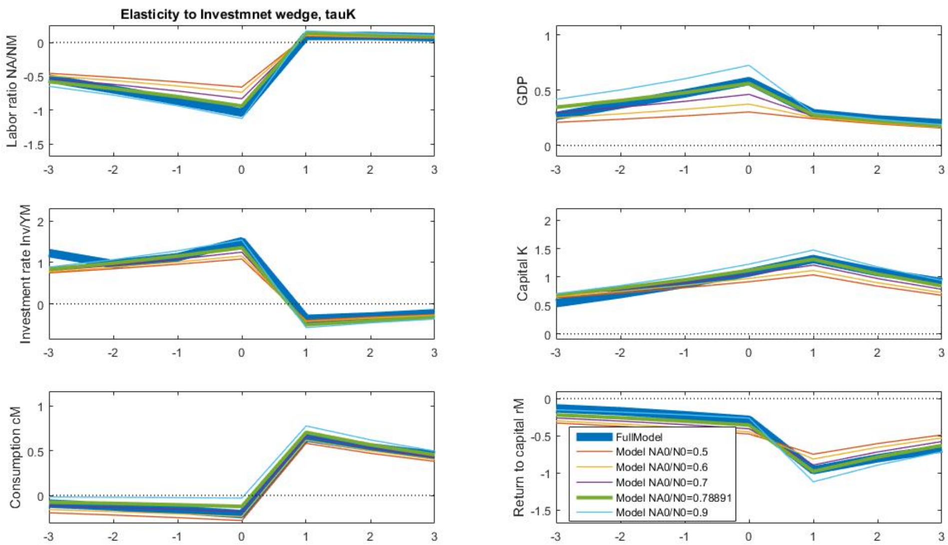

Figure 91: Response to Investment Wedge shock

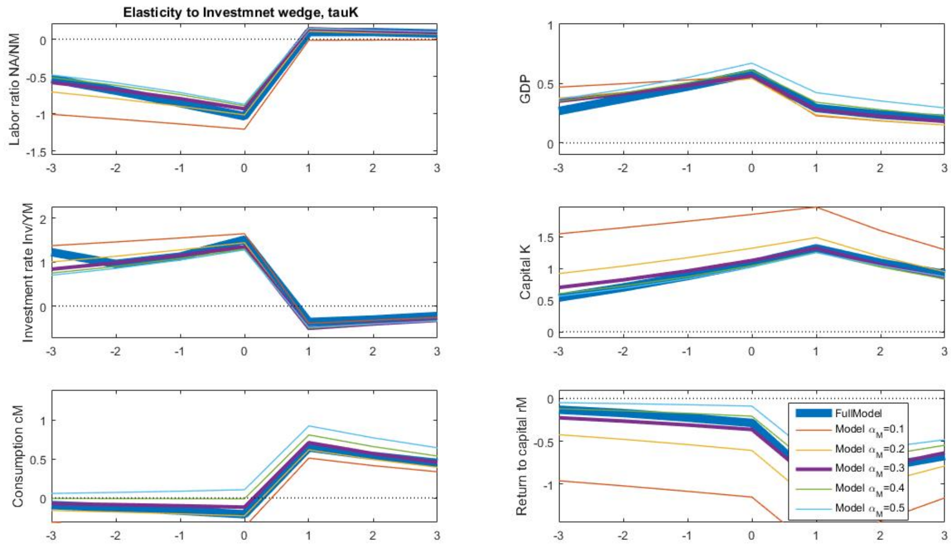

Figure 92: Response to Investment Wedge shock

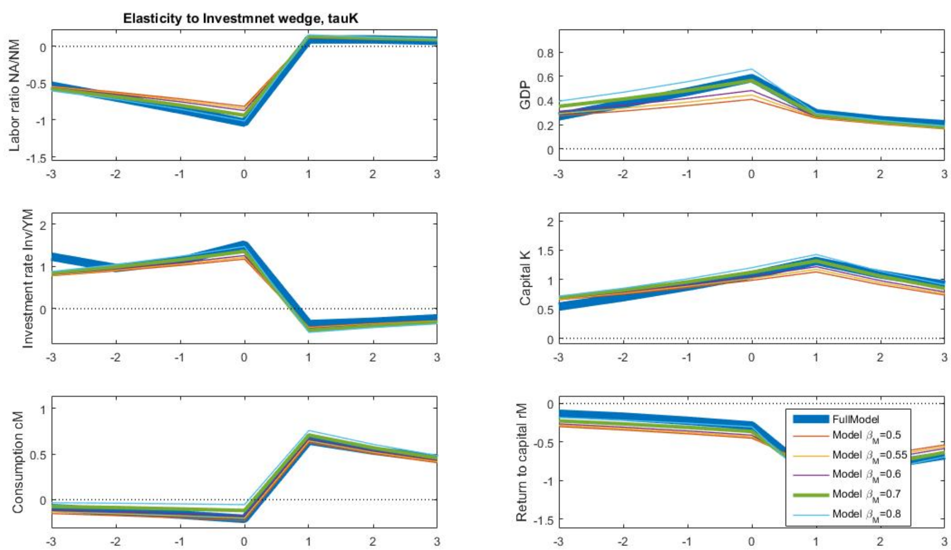

Figure 93: Response to Investment Wedge shock

6.2 Decompositions

Here we first repeat the Tables 34 and 35 with the full decompositions of changes in the labor share and GDP into effects of TFPs and wedges, and then show how they are affected by changes in the parameters of the model, as well as alternative data sources that could be used for the analysis. To recap, our main findings are that 1) the largest contributors to changes in the labor share are the consumption component of the labor wedge, agricultural TFP, the investment wedge, the production component of the labor wedge, and manufacturing TFP; 2) the largest contributors to changes in GDP are manufacturing TFP, agricultural TFP, the investment wedge, and the consumption component of the labor wedge; 3) all of these factors show a pronounced asymmetry along the policy cycle, with TFPs and wedges pulling the economy in opposite directions along the policy cycle; 4) right-wing policies increase TFP and increase wedges on balance boosting GDP growth but pushing people towards agriculture; 5) left-wing policies lower TFP and decrease wedges on balance dampening GDP growth but pushing people out of agriculture. We find that all of these conclusions are robust to a wide variety of alternative assumptions and data sources that we consider below.

First we consider alternative parameterizations. As we observed in the previous subsection, the distance from subsistence is the first key parameter that determines the sizes of the elasticities and presumably could affect the relative explanatory power of TFP and components of the labor wedge, both on the labor share and on GDP. Here we consider two extreme parameters. First, as shown in Tables 36-37, we set the subsistence level to 70 yuan instead of the baseline value of 54 yuan, implying that the subsistence level is nearly reached in 1960, the year of the famine. This is the highest possible level of subsistence we can set without violating the assumptions of the model that consumption is always above subsistence. We find that in this case, the major difference is during the Great Leap Forward and the recovery from it, with the contribution of agricultural TFP increasing and the contributions of the components of the labor wedge amplified to compensate for the larger effects of agricultural TFP. The contributions of the other driving forces, manufacturing TFP and the investment wedge, are affected only marginally.

Second, as shown in Tables 38-39, if we push the subsistence level to the opposite extreme by setting it to 0, the effects of agricultural TFP on the labor share are reduced to zero (consistent with the absense of static effects of TFP on the labor share when preferences are homothetic) and the effects of the components of the labor wedge are also reduced in absolute value to compensate for this. The effects of manufacturing TFP increase somewhat, and the effects of the investment wedge remain unchanged. Overall, the effect of the subsistence parameter mainly affects the quantitative contribution of agricultural TFP without changing its qualitative behavior along the policy cycle.

Third, as shown in Tables 40-41, we consider the case of a constant-elasticity-of-substitution (CES) utility function, where the parameter σ is set to 0.5 instead of the baseline of 1. This change amplifies the contribution of the consumption component of the labor wedge and also amplifies slightly the contribution of the investment wedge (which tends to move in the opposite direction along the policy cycle). However, the main compensating factor is the amplified effect of the expected future consumption path, both on the labor share and on GDP. Overall, reduction in the CES parameter towards some of the estimates in the literature strengthens all of our main conclusions by amplifying the fluctuations in the consumption component of the labor wedge and their economic impact.

Fourth, as shown in Tables 42-47, we consider various changes in the production parameters, notably the shares of capital in the production functions in both sectors. Increasing the share of capital in manufacturing production (from 0.3 to 0.5) reduces the contribution of manufacturing TFP and amplifies the contribution of the investment wedge on GDP growth. The effects on the labor share are largely unchanged. Increasing the share of capital in agricultural production (from 0.14 to 0.3) amplifies the contributions of TFP in both sectors, the non-consumption component of the capital wedge, and the investment wedge, while dampening the effect of the consumption component of the intersectoral wedges. Reducing the share of capital in agricultural production (from 0.14 to 0.06) has the opposite effects. All of these changes affect only the relative sizes of contributions of various wedges and TFPs without changing our main conclusions.

As a second exercise, we consider alternative data sources. First, as shown in Tables 48-49, we consider the effect of replacing our baseline series for relative prices by the relative prices advocated by Young (2003), as we discuss in Section 1.8 of this appendix. We find that the effect of changing this price series is negligible, with only tiny changes in the contributions of the intratemporal components of wedges, fully compensating for each other. Second, as shown

	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	-3.3	3.4	-5.0	0.6	0.3	1.5	-2.6
Agric. TFP, X^A	-3.4	22.6	-7.2	1.5	-2.0	1.3	7.9
Cons. wedge,τ^C	-1.4	-21.5	16.0	-3.7	3.1	-6.1	-16.7
Prod. wedge,τ^P	1.0	-5.8	3.8	0.8	0.7	0.5	-2.7
Mobil. wedge,τ^M	2.1	4.7	0.1	0.0	-2.3	-0.4	3.6
Non-cons. comp. capital wedge,τ^R	-0.1	2.6	0.6	0.0	0.4	0.0	3.6
Investment wedge,τ_K	0.5	-1.4	-3.1	-4.6	-4.7	-1.8	-13.9
Defense, g	1.8	0.4	0.1	0.5	0.2	0.0	3.0
Lab. force, χN	-1.1	-1.2	-1.9	-2.6	-1.0	-0.6	-8.6
Population, N	1.9	-0.5	2.5	3.7	1.8	1.0	11.3
Agric. trade, x	0.3	-3.0	0.0	0.0	0.0	0.0	-2.7
Manuf. trade, q	-0.1	-0.4	0.1	0.0	0.1	0.0	-0.3
Expectations	0.0	0.1	0.2	1.6	2.1	2.2	7.9
Initial capital, K_{1953}	3.2	-0.1	0.1	0.1	0.0	0.0	3.1
Total	1.0	-6.9	4.6	-2.7	-1.7	-2.9	-12.5
Data change	-1.8	-4.1	4.4	-2.6	-1.7	-2.7	-11.9

Table 34: Wedge decomposition of changes in labor share, (percentage points), 1953-78

	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	16.4	-11.0	36.9	16.7	3.8	-6.0	56.4
Agric. TFP, X^A	14.2	-29.6	17.4	-5.3	6.9	-3.4	4.2
Cons. wedge,τ^C	-0.8	17.5	-17.7	-0.9	-7.0	8.4	1.4
Prod. wedge,τ^P	-0.9	9.0	-7.2	-4.1	-3.4	-1.1	-3.0
Mobil. wedge,τ^M	-2.0	-4.9	-3.7	-1.0	5.0	1.3	-4.8
Non-cons. comp. capital wedge,τ^R	-0.9	-2.8	-3.1	-1.1	-1.3	-0.3	-9.7
Investment wedge,τ_K	-0.9	1.5	12.1	22.5	18.3	11.7	68.6
Defense, g	-2.6	0.7	0.1	-1.6	-0.6	0.0	-4.0
Lab. force, χN	7.5	9.0	14.4	23.5	9.8	5.6	73.1
Population, N	-1.2	-0.4	-2.7	-9.2	-6.3	-3.8	-25.6
Agric. trade, x	-0.4	1.9	-0.9	-0.4	-0.1	0.0	0.0
Manuf. trade, q	0.1	0.8	-0.9	-0.3	-0.4	-0.1	-0.8
Expectations	0.0	-0.1	-0.8	-5.0	-6.6	-6.5	-23.0
Initial capital, K_{1953}	3.4	1.2	0.5	0.2	0.0	0.0	5.4
Total	32.0	-7.2	44.4	34.1	18.2	5.8	138.3
Data change	29.7	-4.5	46.6	33.8	18.2	5.7	140.5

Table 35: Wedge decomposition of changes in GDP, (log points), 1953-78

$\gamma = 0.07$	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	-2.8	-0.1	-3.4	-0.3	-0.2	1.1	-5.5
Agric. TFP, X^A	-5.2	38.2	-8.8	2.2	-2.9	1.9	15.9
Cons. wedge,τ^C	0.1	-22.5	15.1	-3.5	3.8	-5.7	-15.6
Prod. wedge,τ^P	0.8	-6.6	2.7	0.8	0.7	0.4	-4.3
Mobil. wedge,τ^M	2.0	3.4	0.4	0.1	-2.1	-0.4	2.9
Non-cons. comp. capital wedge,τ^R	0.3	3.5	1.4	0.1	0.6	0.1	6.2
Investment wedge,τ_K	0.5	-1.0	-2.6	-4.8	-4.4	-2.1	-13.6
Defense, g	1.6	0.1	0.0	0.5	0.2	0.0	2.4
Lab. force, χN	-1.5	-2.4	-3.0	-3.9	-1.6	-1.0	-12.9
Population, N	2.6	0.2	4.0	5.3	2.5	1.4	18.2
Agric. trade, x	0.3	-3.7	-0.6	0.0	0.0	0.0	-4.0
Manuf. trade, q	-0.1	-0.4	0.1	0.0	0.1	0.0	-0.1
Expectations	0.0	0.1	0.2	1.4	1.9	1.9	7.0
Initial capital, K_{1953}	0.7	-1.1	-0.5	-0.1	0.0	0.0	-1.0
Total	-1.0	-3.5	3.1	-2.8	-1.8	-2.9	-12.6
Data change	-1.8	-4.1	4.4	-2.6	-1.7	-2.7	-11.9

Table 36: Wedge decomposition of changes in labor share, (percentage points), 1953-78

$\gamma = 0.07$	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	15.7	-7.6	32.7	14.7	3.6	-5.7	52.9
Agric. TFP, X^A	16.5	-35.9	16.1	-7.1	8.5	-4.1	-1.1
Cons. wedge,τ^C	-2.1	20.9	-11.2	1.7	-7.8	7.9	10.4
Prod. wedge,τ^P	-0.7	10.6	-3.7	-2.3	-2.7	-0.8	4.5
Mobil. wedge,τ^M	-2.0	-3.7	-3.4	-1.0	4.3	1.3	-3.9
Non-cons. comp. capital wedge,τ^R	-1.1	-3.5	-6.0	-2.7	-2.0	-0.7	-16.5
Investment wedge,τ_K	-0.7	1.6	11.2	22.8	17.8	11.9	68.6
Defense, g	-2.2	1.1	0.4	-1.4	-0.5	0.1	-2.5
Lab. force, χN	7.9	10.0	16.3	26.9	11.6	6.7	83.2
Population, N	-2.1	-1.4	-5.4	-13.3	-8.6	-5.1	-38.5
Agric. trade, x	-0.5	2.3	5.0	2.3	0.6	0.2	10.0
Manuf. trade, q	0.1	0.7	-0.8	-0.2	-0.3	0.0	-0.5
Expectations	0.0	-0.1	-0.7	-4.7	-6.1	-5.9	-21.1
Initial capital, K_{1953}	4.3	1.9	1.0	0.5	0.1	0.1	7.9
Total	33.1	-3.0	51.5	36.1	18.5	5.9	153.2
Data change	29.7	-4.5	46.6	33.8	18.2	5.7	140.5

Table 37: Wedge decomposition of changes in GDP, (log points), 1953-78

$\gamma = 0$	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	-4.2	10.3	-8.3	2.7	1.2	2.3	2.7
Agric. TFP, X^A	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1
Cons. wedge,τ^C	-4.2	-13.6	14.5	-3.9	1.7	-6.8	-15.0
Prod. wedge,τ^P	1.7	-5.1	4.7	0.5	0.7	0.7	-2.0
Mobil. wedge,τ^M	2.4	6.7	-0.9	0.1	-2.9	-0.3	4.4
Non-cons. comp. capital wedge,τ^R	-0.9	1.4	0.1	0.0	-0.1	0.0	0.4
Investment wedge,τ_K	0.6	-1.8	-3.8	-4.3	-5.3	-1.1	-13.6
Defense, g	2.1	0.7	0.1	0.6	0.3	0.1	3.8
Lab. force, χN	-0.4	0.7	-0.7	-0.5	-0.2	-0.1	-1.4
Population, N	0.5	-1.5	0.6	1.2	0.7	0.4	2.2
Agric. trade, x	0.1	-1.7	-0.1	0.0	0.0	0.0	-1.7
Manuf. trade, q	-0.1	-0.6	0.0	0.0	0.1	0.0	-0.5
Expectations	0.0	0.1	0.3	1.8	2.6	2.8	10.0
Initial capital, K_{1953}	3.0	0.3	0.1	0.0	0.0	0.0	3.4
Total	0.5	-6.3	5.3	-2.2	-1.6	-2.7	-11.1
Data change	-1.8	-4.1	4.4	-2.6	-1.7	-2.7	-11.9

Table 38: Wedge decomposition of changes in labor share, (percentage points), 1953-78

$\gamma = 0$	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	17.5	-17.1	41.0	13.4	1.6	-8.0	47.5
Agric. TFP, X^A	10.6	-15.7	15.7	-2.5	3.2	-1.6	11.4
Cons. wedge,τ^C	1.4	12.9	-18.0	0.6	-3.6	10.1	7.8
Prod. wedge,τ^P	-1.6	8.8	-10.9	-4.6	-3.6	-1.3	-6.6
Mobil. wedge,τ^M	-2.2	-6.6	-3.4	-1.0	6.3	1.4	-4.8
Non-cons. comp. capital wedge,τ^R	0.0	-1.3	-1.2	-0.4	-0.4	0.0	-3.2
Investment wedge,τ_K	-1.2	1.6	13.9	21.8	19.7	11.1	69.3
Defense, g	-2.8	0.3	-0.1	-1.8	-0.8	-0.1	-5.3
Lab. force, χN	7.1	7.1	11.6	18.0	7.1	3.9	57.3
Population, N	0.0	0.7	0.8	-2.9	-2.9	-1.8	-7.2
Agric. trade, x	-0.2	1.2	-0.2	-0.1	0.0	0.0	0.7
Manuf. trade, q	0.1	0.9	-0.6	-0.1	-0.4	-0.1	-0.2
Expectations	0.0	-0.1	-0.8	-5.6	-7.8	-7.9	-27.1
Initial capital, K_{1953}	1.0	0.3	0.0	0.0	0.0	0.0	1.3
Total	29.8	-7.0	47.9	34.9	18.4	5.7	140.9
Data change	29.7	-4.5	46.6	33.8	18.2	5.7	140.5

Table 39: Wedge decomposition of changes in GDP, (log points), 1953-78

$\sigma = 0.5$	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	-1.2	1.8	-1.9	0.1	-0.4	0.7	-0.9
Agric. TFP, X^A	-5.8	31.1	-9.9	2.9	-3.5	2.3	8.1
Cons. wedge,τ^C	-1.5	-28.2	17.2	-5.2	3.6	-6.9	-24.9
Prod. wedge,τ^P	1.0	-4.6	2.8	0.7	0.7	0.4	-1.7
Mobil. wedge,τ^M	1.4	3.3	0.3	0.2	-1.7	-0.3	2.8
Non-cons. comp. capital wedge,τ^R	0.6	2.2	0.9	0.1	0.7	0.1	4.7
Investment wedge,τ_K	0.2	4.0	-4.3	-6.3	-6.1	-3.1	-14.9
Defense, g	1.8	0.2	0.1	0.5	0.2	0.0	2.8
Lab. force, χN	-0.7	-1.4	-1.7	-3.2	-1.4	-0.9	-9.5
Population, N	2.1	-0.8	2.6	4.7	2.4	1.4	14.1
Agric. trade, x	0.4	-2.6	0.0	0.0	0.0	0.0	-2.2
Manuf. trade, q	-0.1	-0.4	0.1	0.0	0.1	0.0	-0.2
Expectations	0.0	0.2	0.7	3.6	4.2	4.1	16.6
Initial capital, K_{1953}	2.7	-0.6	-0.1	0.0	0.0	0.0	1.8
Total	0.6	-7.3	4.5	-2.8	-1.7	-2.9	-13.5
Data change	-1.8	-4.1	4.4	-2.6	-1.7	-2.7	-11.9

Table 40: Wedge decomposition of changes in labor share, (percentage points), 1953-78

$\sigma = 0.5$	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	13.8	-9.3	31.1	16.8	5.9	-3.7	54.8
Agric. TFP, X^A	17.0	-29.5	18.2	-8.0	9.4	-4.7	7.7
Cons. wedge,τ^C	-2.1	23.7	-12.1	4.3	-7.0	10.1	20.1
Prod. wedge,τ^P	-1.1	7.5	-4.7	-2.8	-2.9	-1.1	-1.8
Mobil. wedge,τ^M	-1.3	-3.4	-3.6	-2.1	3.2	0.9	-5.8
Non-cons. comp. capital wedge,τ^R	-1.6	-2.6	-3.4	-2.0	-2.0	-0.7	-12.8
Investment wedge,τ_K	1.1	-6.6	8.3	26.4	22.9	16.1	73.4
Defense, g	-2.7	0.9	0.4	-1.4	-0.5	0.1	-3.1
Lab. force, χN	6.5	8.6	13.4	25.0	11.6	7.0	76.2
Population, N	-1.1	-0.3	-2.3	-11.4	-8.8	-5.6	-32.4
Agric. trade, x	-0.5	0.9	-1.5	-0.9	-0.3	-0.1	-2.5
Manuf. trade, q	0.2	0.9	-1.0	-0.5	-0.5	-0.1	-1.3
Expectations	-0.1	-0.4	-2.3	-12.0	-14.0	-12.8	-48.8
Initial capital, K_{1953}	5.0	2.7	1.7	1.1	0.3	0.2	11.0
Total	32.9	-6.8	42.3	32.4	17.5	5.5	134.7
Data change	29.7	-4.5	46.6	33.8	18.2	5.7	140.5

Table 41: Wedge decomposition of changes in GDP, (log points), 1953-78

$\alpha_{K,M} = \alpha_{N,M} = 0.5$	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	-2.7	3.1	-4.2	0.8	0.9	1.5	-1.0
Agric. TFP, X^A	-3.0	21.2	-6.3	1.2	-1.8	1.1	8.2
Cons. wedge,τ^C	-1.5	-19.9	14.0	-3.2	2.5	-5.3	-15.8
Prod. wedge,τ^P	0.3	-4.3	3.3	0.9	0.5	0.4	-2.0
Mobil. wedge,τ^M	1.9	4.7	0.1	-0.1	-2.0	-0.3	3.7
Non-cons. comp. capital wedge,τ^R	-0.3	2.8	0.6	0.0	0.3	0.0	3.5
Investment wedge,τ_K	0.9	-4.4	-2.4	-4.0	-4.0	-1.4	-13.9
Defense, g	1.8	0.5	0.1	0.5	0.3	0.1	3.1
Lab. force, χN	-1.1	-1.1	-1.8	-2.1	-0.8	-0.4	-7.3
Population, N	1.7	-0.3	2.3	3.2	1.5	0.8	10.1
Agric. trade, x	0.2	-3.0	0.0	0.0	0.0	0.0	-2.8
Manuf. trade, q	-0.1	-0.5	0.1	0.0	0.1	0.0	-0.3
Expectations	0.0	0.0	0.1	0.7	1.0	1.1	3.8
Initial capital, K_{1953}	2.7	-0.2	0.2	0.2	0.0	0.0	2.8
Total	0.6	-7.0	4.8	-2.5	-1.7	-2.8	-12.6
Data change	-1.8	-4.1	4.4	-2.6	-1.7	-2.7	-11.9

Table 42: Wedge decomposition of changes in labor share, (percentage points), 1953-78

$\alpha_{K,M} = \alpha_{N,M} = 0.5$	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	16.1	-16.1	25.1	11.8	-1.1	-8.3	27.3
Agric. TFP, X^A	13.2	-23.8	12.7	-5.0	5.3	-2.6	2.7
Cons. wedge,τ^C	-1.2	13.6	-8.0	-2.9	-4.8	4.5	2.5
Prod. wedge,τ^P	0.2	6.8	-4.2	-3.4	-2.8	-1.0	-1.9
Mobil. wedge,τ^M	-1.4	-4.0	-3.9	-1.2	3.0	1.0	-5.9
Non-cons. comp. capital wedge,τ^R	0.2	-1.9	-2.7	-1.3	-1.0	-0.3	-7.1
Investment wedge,τ_K	-2.3	6.5	17.6	28.3	21.4	15.0	92.2
Defense, g	-2.6	0.8	0.4	-1.6	-0.7	0.0	-3.6
Lab. force, χN	6.8	9.3	13.3	21.4	9.2	5.4	68.5
Population, N	-0.6	-1.4	-1.4	-7.1	-5.6	-3.7	-21.8
Agric. trade, x	-0.3	0.4	-1.1	-0.6	-0.2	-0.1	-1.9
Manuf. trade, q	0.1	1.0	-1.0	-0.4	-0.5	-0.1	-1.0
Expectations	0.0	0.0	-0.3	-2.3	-3.4	-3.6	-12.0
Initial capital, K_{1953}	6.0	3.0	1.6	0.8	0.2	0.1	11.8
Total	34.3	-5.9	48.0	36.6	19.2	6.4	149.9
Data change	29.7	-4.5	46.6	33.8	18.2	5.7	140.5

Table 43: Wedge decomposition of changes in GDP, (log points), 1953-78

$\alpha_{K,A} = 0.06$	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	-3.4	4.9	-5.6	1.5	0.7	1.7	-0.6
Agric. TFP, X^A	-3.1	22.6	-8.8	1.1	-2.6	1.4	5.1
Cons. wedge,τ^C	-1.7	-22.0	19.0	-4.8	3.4	-6.8	-16.7
Prod. wedge,τ^P	1.1	-5.6	3.7	0.7	0.6	0.4	-2.8
Mobil. wedge,τ^M	2.2	4.4	-0.2	0.0	-2.4	-0.3	3.1
Non-cons. comp. capital wedge,τ^R	-0.5	1.9	0.3	-0.1	0.1	0.0	1.8
Investment wedge,τ_K	0.5	-1.5	-3.0	-4.2	-4.5	-1.4	-12.7
Defense, g	1.8	0.5	0.1	0.5	0.3	0.1	3.2
Lab. force, χN	-1.2	-0.6	-2.1	-2.4	-0.9	-0.5	-7.8
Population, N	2.0	-1.0	3.0	3.8	1.7	0.9	11.5
Agric. trade, x	0.3	-3.9	-0.1	-0.1	0.0	0.0	-3.8
Manuf. trade, q	-0.1	-0.4	0.0	0.0	0.1	0.0	-0.4
Expectations	0.0	0.1	0.3	1.6	2.1	2.2	8.1
Initial capital, K_{1953}	4.7	0.3	0.3	0.1	0.0	0.0	5.1
Total	2.4	-7.2	4.3	-2.7	-1.7	-2.8	-11.9
Data change	-1.8	-4.1	4.4	-2.6	-1.7	-2.7	-11.9

Table 44: Wedge decomposition of changes in labor share, (percentage points), 1953-78

$\alpha_{K,A} = 0.06$	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	16.6	-14.3	38.7	13.1	2.0	-7.0	48.3
Agric. TFP, X^A	12.9	-29.3	24.2	-2.3	9.5	-3.1	16.3
Cons. wedge,τ^C	0.1	18.5	-27.1	1.8	-7.8	10.6	-1.7
Prod. wedge,τ^P	-1.1	9.1	-7.3	-3.7	-3.0	-1.0	-1.9
Mobil. wedge,τ^M	-2.2	-4.3	-2.4	-0.6	5.2	1.2	-2.4
Non-cons. comp. capital wedge,τ^R	0.7	-1.6	-1.4	-0.4	-0.4	-0.1	-3.1
Investment wedge,τ_K	-0.8	1.9	11.4	20.4	17.5	10.3	63.1
Defense, g	-2.7	0.4	-0.1	-1.6	-0.6	0.0	-4.6
Lab. force, χN	7.9	8.1	14.7	22.6	9.1	5.1	70.6
Population, N	-1.9	0.2	-4.3	-9.9	-6.2	-3.6	-27.7
Agric. trade, x	-0.4	3.3	-0.6	-0.2	0.0	0.0	2.0
Manuf. trade, q	0.1	0.8	-0.7	-0.2	-0.4	-0.1	-0.5
Expectations	0.0	-0.1	-0.8	-5.1	-6.8	-6.6	-23.3
Initial capital, K_{1953}	1.7	0.7	0.2	0.1	0.0	0.0	2.7
Total	30.9	-6.5	44.7	33.9	18.0	5.8	137.8
Data change	29.7	-4.5	46.6	33.8	18.2	5.7	140.5

Table 45: Wedge decomposition of changes in GDP, (log points), 1953-78

$\alpha_{K,A} = 0.3$	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	-3.1	1.8	-4.2	-0.9	-0.4	1.1	-5.6
Agric. TFP, X^A	-3.9	23.4	-4.9	2.5	-1.0	1.4	13.7
Cons. wedge,τ^C	-1.2	-19.2	11.8	-2.5	2.7	-5.0	-15.4
Prod. wedge,τ^P	0.9	-6.6	3.7	1.0	0.9	0.5	-3.0
Mobil. wedge,τ^M	2.0	5.3	0.6	0.2	-2.3	-0.5	4.8
Non-cons. comp. capital wedge,τ^R	0.5	4.2	1.3	0.2	0.8	0.1	7.3
Investment wedge,τ_K	0.5	-1.4	-3.3	-5.4	-4.9	-2.6	-15.9
Defense, g	1.8	0.1	0.0	0.5	0.2	0.0	2.6
Lab. force, χN	-1.0	-2.0	-1.8	-3.0	-1.3	-0.8	-9.8
Population, N	1.6	-0.1	1.9	3.4	1.8	1.1	10.8
Agric. trade, x	0.2	-2.8	0.1	0.0	0.0	0.0	-2.4
Manuf. trade, q	-0.1	-0.5	0.2	0.0	0.1	0.0	-0.2
Expectations	0.0	0.1	0.2	1.5	2.0	2.1	7.6
Initial capital, K_{1953}	-0.1	-1.2	-0.5	-0.1	0.0	0.0	-1.9
Total	-2.0	-5.0	4.2	-2.9	-1.8	-2.9	-14.0
Data change	-1.8	-4.1	4.4	-2.6	-1.7	-2.7	-11.9

Table 46: Wedge decomposition of changes in labor share, (percentage points), 1953-78

$\alpha_{K,A} = 0.3$	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	16.0	-6.4	35.1	22.9	7.1	-4.0	70.8
Agric. TFP, X^A	16.4	-29.3	8.0	-11.0	2.2	-4.4	-15.5
Cons. wedge,τ^C	-2.2	14.1	-4.4	-3.6	-5.6	5.2	5.0
Prod. wedge,τ^P	-0.5	9.1	-6.9	-4.7	-4.1	-1.4	-4.4
Mobil. wedge,τ^M	-1.8	-5.8	-6.0	-2.2	4.5	1.4	-9.2
Non-cons. comp. capital wedge,τ^R	-3.7	-3.8	-6.0	-3.0	-2.8	-0.9	-20.8
Investment wedge,τ_K	-0.9	0.8	13.1	26.0	19.9	14.1	77.8
Defense, g	-2.4	1.0	0.5	-1.4	-0.6	0.0	-2.8
Lab. force, χN	7.0	10.0	14.4	25.0	11.0	6.5	77.6
Population, N	-0.1	-1.1	-0.6	-7.7	-6.3	-4.1	-22.0
Agric. trade, x	-0.3	0.2	-1.3	-0.7	-0.2	-0.1	-2.4
Manuf. trade, q	0.1	0.9	-1.2	-0.5	-0.5	-0.1	-1.3
Expectations	0.0	-0.1	-0.7	-4.8	-6.4	-6.3	-22.2
Initial capital, K_{1953}	6.9	2.4	1.4	0.7	0.2	0.1	11.6
Total	34.6	-8.0	45.2	35.0	18.6	6.0	142.3
Data change	29.7	-4.5	46.6	33.8	18.2	5.7	140.5

Table 47: Wedge decomposition of changes in GDP, (log points), 1953-78

in Tables 50-51, we consider the effects of replacing Chow's sectoral capital series by data for farm capital taken from Tang (1982), also discussed in Section 1.8. This change increases observed manufacturing capital stock and thus has an overall effect similar to an increased share of capital in manufacturing production. The contribution of manufacturing TFP is reduced, while the contributions of the non-consumption component of the capital wedge and of the investment wedge are amplified. These effects are noticeable, but do not change the main results or conclusions.

Finally, in Tables 52-53, we present results where gross fixed capital formation from the CSY is the primary source for overall investment and consumption of manufacturing goods is computed as the residual between production, investment, defense and international trade. This change implies a much larger decline in the consumption component of the labor wedge and a much larger decline in the investment wedge in the pre-1960 period, which greatly amplifies the contributions of both wedges in that period, which nonetheless largely compensate each other. Such amplification is hard to believe given that it is inconsistent with available data on manufacturing consumption, hence the main reason for the change in the way we construct the data. However, even with this method, the main results regarding the effects of wedges and TFPs pulling in opposite directions, and varying in unison along the policy cycle remain intact.

$\frac{p_{A,t}}{p_{M,t}}$ as in Young (2003)	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	-3.3	3.4	-5.0	0.6	0.3	1.5	-2.6
Agric. TFP, X^A	-3.4	22.6	-7.2	1.5	-2.0	1.3	7.9
Cons. wedge,τ^C	0.3	-25.1	14.9	-4.3	3.6	-5.8	-19.7
Prod. wedge,τ^P	-0.6	-0.7	4.8	1.5	0.2	0.1	1.7
Mobil. wedge,τ^M	2.1	4.7	0.1	0.0	-2.3	-0.4	3.6
Non-cons. comp. capital wedge,τ^R	-0.3	2.3	0.5	-0.1	0.4	0.1	3.0
Investment wedge,τ_K	0.5	-1.4	-3.1	-4.6	-4.7	-1.8	-13.9
Defense, g	1.8	0.4	0.1	0.5	0.2	0.0	3.0
Lab. force, χN	-1.1	-1.2	-1.9	-2.6	-1.0	-0.6	-8.6
Population, N	1.9	-0.5	2.5	3.7	1.8	1.0	11.3
Agric. trade, x	0.3	-3.0	0.0	0.0	0.0	0.0	-2.7
Manuf. trade, q	-0.1	-0.4	0.1	0.0	0.1	0.0	-0.3
Expectations	0.0	0.1	0.2	1.6	2.1	2.2	7.9
Initial capital, K_{1953}	3.2	-0.1	0.1	0.1	0.0	0.0	3.1
Total	1.0	-6.9	4.5	-2.7	-1.7	-2.9	-12.5
Data change	-1.8	-4.1	4.4	-2.6	-1.7	-2.7	-11.9

Table 48: Wedge decomposition of changes in labor share, (percentage points), 1953-78

$\frac{p_{A,t}}{p_{M,t}}$ as in Young (2003)	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	16.4	-11.0	36.9	16.7	3.8	-6.0	56.4
Agric. TFP, X^A	14.2	-29.6	17.4	-5.3	6.9	-3.4	4.2
Cons. wedge,τ^C	-1.9	18.6	-15.4	0.9	-7.5	8.2	4.7
Prod. wedge,τ^P	0.2	6.9	-10.3	-6.4	-2.8	-0.8	-8.6
Mobil. wedge,τ^M	-2.0	-4.9	-3.7	-1.0	5.0	1.3	-4.8
Non-cons. comp. capital wedge,τ^R	-0.9	-1.8	-2.3	-0.6	-1.4	-0.4	-7.5
Investment wedge,τ_K	-0.9	1.5	12.1	22.5	18.3	11.7	68.6
Defense, g	-2.6	0.7	0.1	-1.6	-0.6	0.0	-4.0
Lab. force, χN	7.5	9.0	14.4	23.5	9.8	5.6	73.1
Population, N	-1.2	-0.4	-2.7	-9.2	-6.3	-3.8	-25.6
Agric. trade, x	-0.4	1.9	-0.9	-0.4	-0.1	0.0	0.0
Manuf. trade, q	0.1	0.8	-0.9	-0.3	-0.4	-0.1	-0.8
Expectations	0.0	-0.1	-0.8	-5.0	-6.6	-6.5	-23.0
Initial capital, K_{1953}	3.4	1.2	0.5	0.2	0.0	0.0	5.4
Total	32.0	-7.2	44.4	34.1	18.2	5.8	138.3
Data change	29.7	-4.5	46.6	33.8	18.2	5.7	140.5

Table 49: Wedge decomposition of changes in GDP, (log points), 1953-78

K_t^A as in Tang (1982)	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	-3.8	5.2	-5.6	0.8	0.4	1.5	-1.9
Agric. TFP, X^A	-2.0	16.5	-5.7	1.1	-2.5	1.4	5.1
Cons. wedge,τ^C	-0.7	-22.0	16.1	-3.8	3.1	-6.1	-16.6
Prod. wedge,τ^P	0.6	-5.6	3.8	0.8	0.7	0.5	-2.8
Mobil. wedge,τ^M	2.1	4.8	0.1	0.0	-2.3	-0.4	3.7
Non-cons. comp. capital wedge,τ^R	-2.0	12.8	-0.5	0.5	0.7	-0.1	10.9
Investment wedge,τ_K	1.6	-7.9	-2.7	-4.8	-4.6	-1.8	-18.1
Defense, g	1.6	0.5	0.1	0.5	0.2	0.0	3.0
Lab. force, χN	-1.0	-1.4	-1.9	-2.6	-1.0	-0.6	-8.6
Population, N	1.8	-0.5	2.5	3.7	1.8	1.0	11.3
Agric. trade, x	0.1	-2.9	-0.1	0.0	0.0	0.0	-2.8
Manuf. trade, q	0.0	-0.5	0.1	0.0	0.1	0.0	-0.3
Expectations	0.0	0.1	0.2	1.5	2.1	2.2	7.8
Initial capital, K_{1953}	3.9	0.0	0.1	0.0	0.0	0.0	3.8
Total	1.9	-7.6	4.7	-2.6	-1.7	-2.9	-12.4
Data change	-1.8	-4.1	4.4	-2.6	-1.7	-2.7	-11.9

Table 50: Wedge decomposition of changes in labor share, (percentage points), 1953-78

K_t^A as in Tang (1982)	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	20.8	-23.0	35.4	13.4	2.4	-6.3	42.2
Agric. TFP, X^A	9.4	-23.3	14.2	-3.1	8.9	-3.3	6.5
Cons. wedge,τ^C	-1.8	20.0	-18.1	-0.5	-7.0	8.4	3.0
Prod. wedge,τ^P	-0.3	10.5	-6.8	-3.9	-3.4	-1.1	-0.2
Mobil. wedge,τ^M	-2.3	-4.8	-3.5	-0.9	5.0	1.4	-4.5
Non-cons. comp. capital wedge,τ^R	4.3	-12.9	-2.4	-3.9	-2.7	-0.5	-18.2
Investment wedge,τ_K	-4.4	14.6	18.2	26.9	19.4	12.1	90.3
Defense, g	-2.6	0.6	0.2	-1.6	-0.6	0.0	-4.0
Lab. force, χN	7.6	9.8	14.6	23.7	9.8	5.6	74.4
Population, N	-1.3	-0.4	-2.7	-9.3	-6.3	-3.8	-25.9
Agric. trade, x	-0.1	1.8	-0.9	-0.4	-0.1	0.0	0.2
Manuf. trade, q	0.1	0.8	-0.9	-0.3	-0.4	-0.1	-0.9
Expectations	0.0	-0.1	-0.7	-5.0	-6.6	-6.5	-22.8
Initial capital, K_{1953}	2.5	0.8	0.3	0.1	0.0	0.0	3.7
Total	31.8	-5.6	46.9	35.3	18.5	6.0	143.9
Data change	29.7	-4.5	46.6	33.8	18.2	5.7	140.5

Table 51: Wedge decomposition of changes in GDP, (log points), 1953-78

Investment as GFCF, C_t^M residual	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	-2.2	3.6	-5.5	-0.3	-0.1	1.4	-3.2
Agric. TFP, X^A	-3.2	22.6	-7.1	0.9	-2.5	1.2	6.8
Cons. wedge,τ^C	11.8	-27.2	12.0	-5.1	3.5	-6.1	-17.2
Prod. wedge,τ^P	1.0	-6.8	4.0	1.0	0.8	0.4	-3.4
Mobil. wedge,τ^M	2.4	5.0	0.2	0.0	-2.4	-0.4	4.1
Non-cons. comp. capital wedge,τ^R	-0.1	2.8	0.7	0.0	0.4	0.0	3.9
Investment wedge,τ_K	-11.3	6.7	-0.1	-2.9	-4.6	-1.9	-13.5
Defense, g	1.9	0.2	0.2	0.6	0.2	0.0	3.0
Lab. force, χN	-1.1	-1.1	-2.2	-3.0	-1.1	-0.6	-9.0
Population, N	2.0	-1.1	2.8	4.2	1.8	1.0	11.9
Agric. trade, x	0.6	-3.1	0.0	0.0	0.0	0.0	-2.6
Manuf. trade, q	-0.2	-0.3	0.1	0.0	0.1	0.0	-0.3
Expectations	0.2	0.5	0.9	2.6	2.7	2.6	11.8
Initial capital, K_{1953}	0.3	0.0	0.0	0.0	0.0	0.0	0.3
Total	0.5	-7.5	4.8	-2.6	-1.7	-2.9	-13.3
Data change	-1.8	-4.1	4.4	-2.6	-1.7	-2.7	-11.9

Table 52: Wedge decomposition of changes in labor share, (percentage points), 1953-78

Investment as GFCF, C_t^M residual	1953-57	1957-61	1961-66	1966-72	1972-75	1975-77	1953-78
Manuf. TFP, X^M	9.7	-6.1	37.3	24.6	8.6	-3.2	71.6
Agric. TFP, X^A	10.1	-33.4	17.4	-4.3	8.2	-2.9	-1.2
Cons. wedge,τ^C	-21.1	15.8	-14.0	8.4	-5.0	9.6	-4.2
Prod. wedge,τ^P	-0.8	2.2	-6.9	-4.7	-3.1	-1.2	-10.1
Mobil. wedge,τ^M	-2.3	-6.4	-3.8	-1.7	4.8	1.2	-7.8
Non-cons. comp. capital wedge,τ^R	-1.0	-3.6	-2.8	-1.2	-1.3	-0.3	-10.5
Investment wedge,τ_K	51.8	12.4	13.0	12.9	12.1	8.7	113.2
Defense, g	-2.2	1.0	0.0	-1.4	-0.5	0.0	-3.0
Lab. force, χN	7.5	7.1	15.1	23.8	9.8	5.7	72.1
Population, N	-1.5	0.7	-3.8	-10.3	-6.3	-3.8	-27.1
Agric. trade, x	-0.8	-4.1	-1.0	-0.5	-0.1	-0.1	-6.6
Manuf. trade, q	0.2	0.7	-0.8	-0.3	-0.2	-0.1	-0.5
Expectations	-0.3	-0.8	-2.5	-8.1	-8.5	-7.8	-32.4
Initial capital, K_{1953}	0.4	0.2	0.1	0.1	0.0	0.0	0.9
Total	49.6	-14.3	47.3	37.1	18.4	5.7	154.5
Data change	29.7	-4.5	46.6	33.8	18.2	5.7	140.5

Table 53: Wedge decomposition of changes in GDP, (log points), 1953-78