Supplementary Materials[1] for Svend Albæk,[2] Peter Møllgaard,[3] and Per B. Overgaard[4], "Government-Assisted Oligopoly Coordination?A *Concrete* Case," *The Journal of Industrial Economics* 45(4), December 1997, pp. 429-443.

1. Introduction

In this note we provide additional data that supplement the presentation in Section III in our article. The note is therefore not intended to be self-contained.

2. Business upturn and capacity constraints

As mentioned in Section III(i) in the article, construction employment may be an indicator of the demand for concrete. Fig. A1 below shows the mid-quarter number of workers and working masters from 1992-1995.

We also discuss in Section III(i) whether capacity in the construction of ready-mixed concrete is likely to have been a binding constrain that might explain the rise in concrete prices. Figure A2 below shows quarterly production of ready-mixed concrete (of all grades) since 1968. The fat line represents actual numbers while the slim line is a four-quarter moving average of the former.

3. Dynamic oligopoly considerations

Insofar as 10-MPa concrete is concerned, the reported prices of the four facilities we focus on in Region II are presented in Figs. 2 regarding **average prices** and 3 regarding **low prices** in Section III(ii) in the article. Corresponding figures regarding 25-MPa concrete are found as Figs. A3 and A4 below. As is clear from the figures, the prices for 25-MPa show the same broad picture as the prices for 10-MPa.

A remaining question is whether the regional market at hand experienced a business upturn in the first half of 1994 that could explain a particular surge in the price level and a decrease in the dispersion of prices of ready-mixed concrete compared to the nation as a whole. We claim in the article that this is not the case. To shed some light on this issue Table A1 below first shows the number of unemployed construction workers in the country as a whole and in the county of Aarhus. From the first to the second quarter of 1994, unemployment falls a bit more

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Fig. A1: Construction Employment

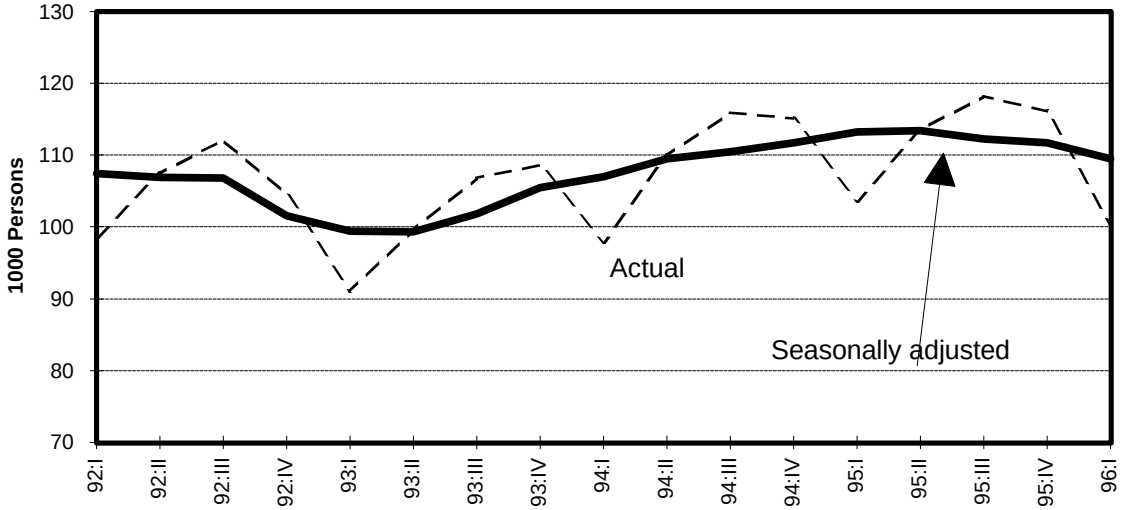


Figure A2: Production of Ready-Mixed Concrete 1968-1994

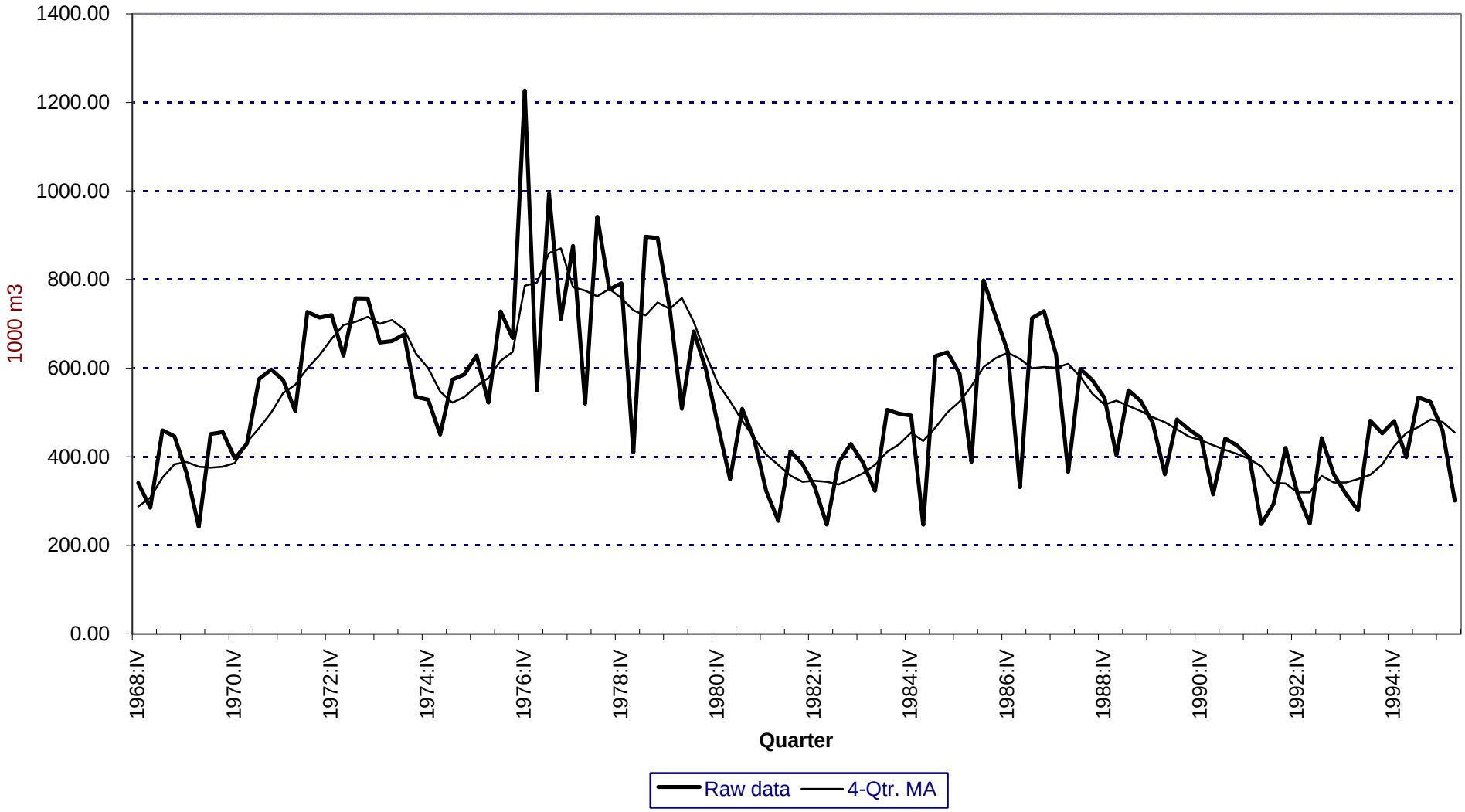


Fig. A3: Average 25-MPa Prices in Aarhus

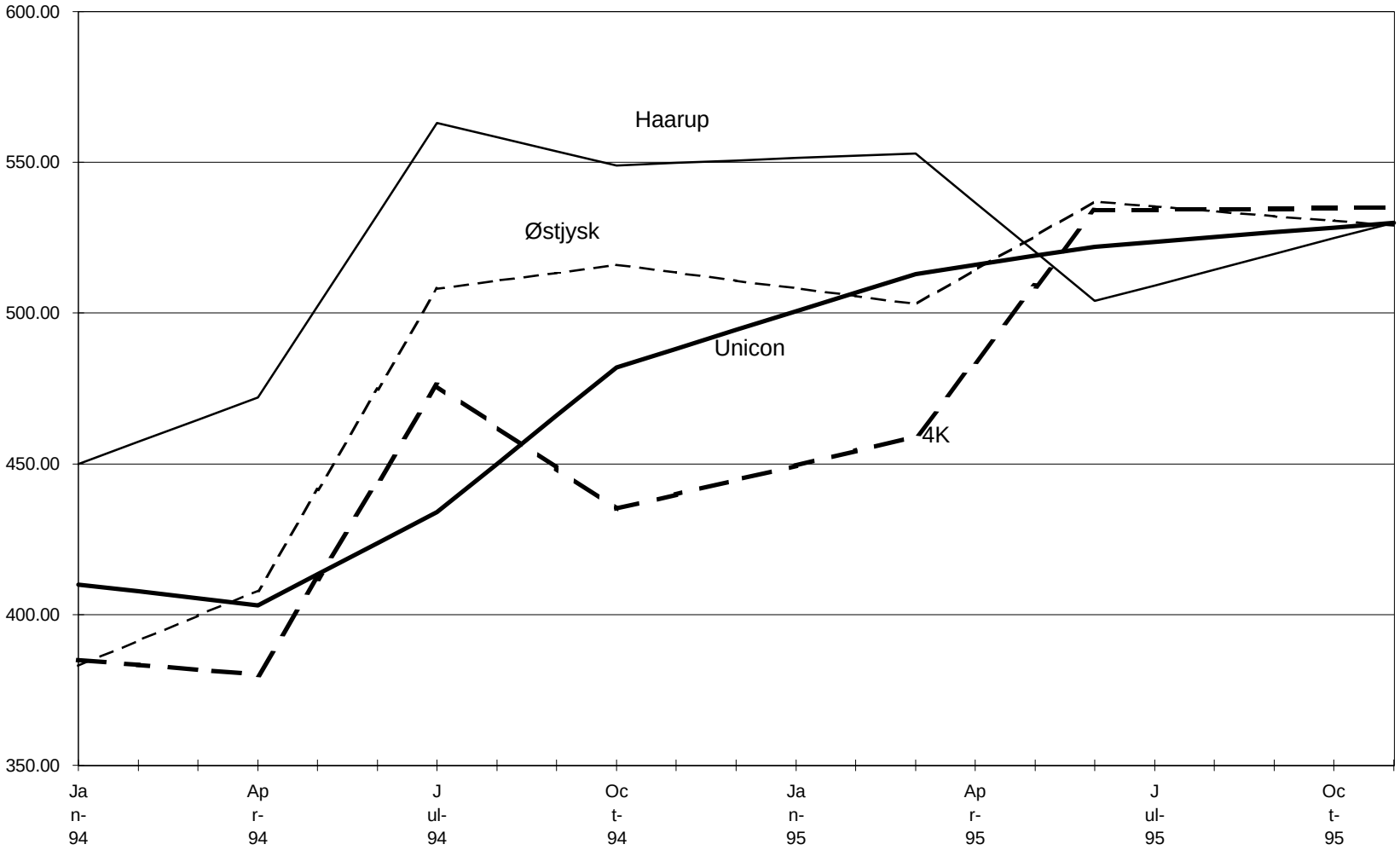
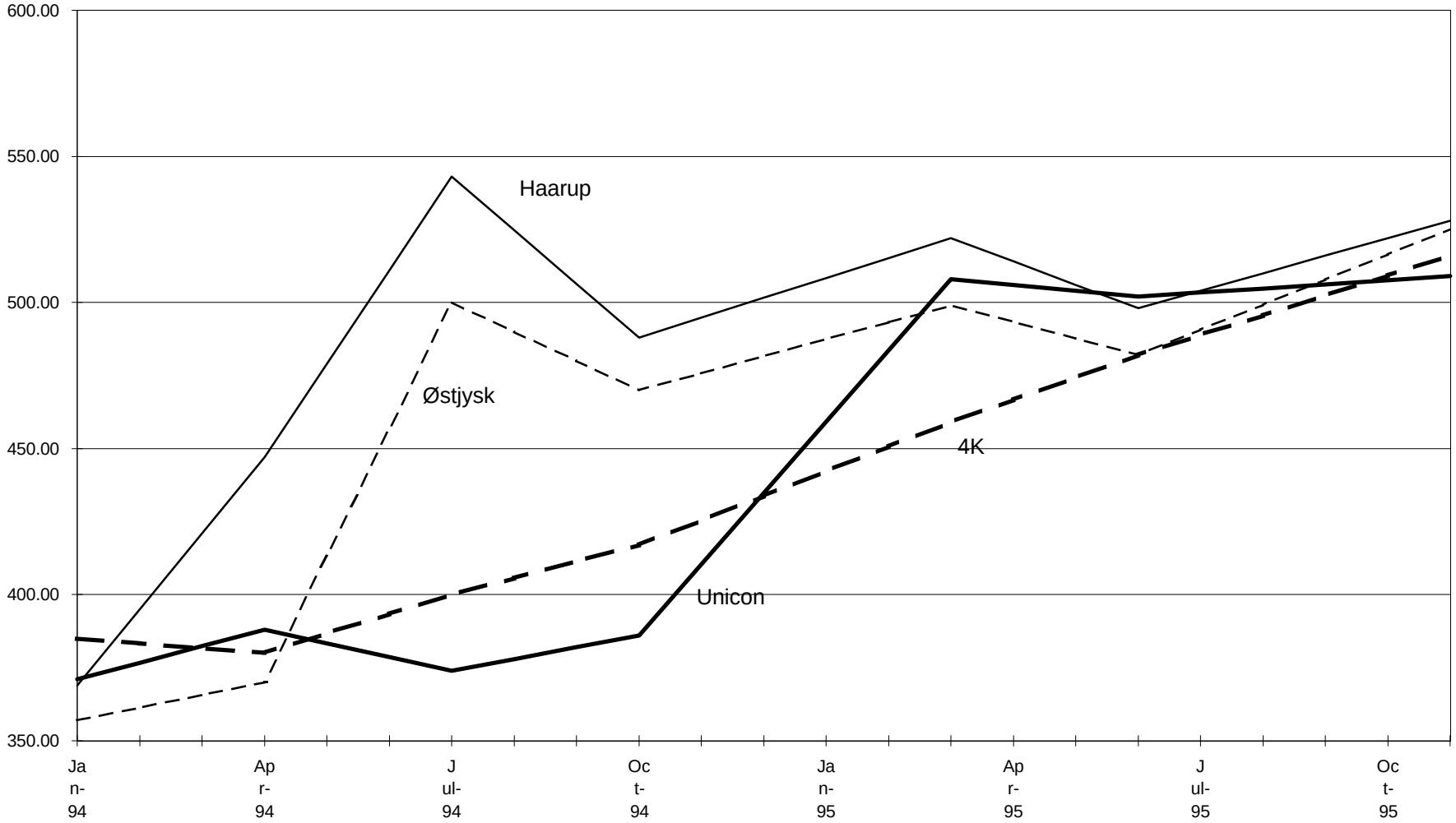


Fig. A4: Low 25-MPa Prices in Aarhus



in the county of Aarhus than in the country as a whole, as can be seen from the small fall in the share of Aarhus' construction unemployment of total Danish construction unemployment. However, in the third quarter of 1994 this trend is more or less reversed. Furthermore, construction unemployment in Aarhus constitutes a rather high share of total construction unemployment in the years 1993-1995, indicating that the local trough in building activity has been a little deeper in Aarhus than in the country as a whole. Based on this labour market measure, we do not consider the upturn in the construction industry in Aarhus to be much stronger than the nation-wide upturn.

To further strengthen this point, another indicator of construction activity, *viz*. the number of square metres started, is also reported in Table A1. The number of square metres started is supposedly closely correlated with the use of concrete for foundations. The table again allows a comparison of the nation-wide trend with that of the county of Aarhus. It is notable that the nation-wide increase in activity from the first to the second quarter of 1994 is much stronger than the increase in Aarhus. Neither this nor the general picture for 1994 suggest that a regional business cycle argument is a strong candidate to explain the exceptional movement of prices in Region II.

Table A1: Activity in the County of Aarhus and in all of Denmark

	Average Number of Unemployed			Thousands of Started m^2		
	Yearly data					
Year	Denmark	Aarhus	Aarhus Denmark in pct.	Denmark	Aarhus	Aarhus Denmark in pct.
1988	9146	1095	11.97	7894.6	1011.2	12.81
1989	10194	1114	10.93	6789.3	1087.2	16.01
1990	10792	1177	10.91	5973.5	988.7	16.55
1991	12922	1496	11.58	5023.6	725.2	14.44
1992	13354	1607	12.03	4843.1	696.9	14.39
1993	14720	1934	13.14	3217.0	457.0	14.21
1994	9268	1146	12.37	3805.2	473.7	12.45
1995	6683	864	12.93	4208.3	661.3	15.71
	Quarterly data					
93:I	19364	2536	13.10	666.8	98.3	14.74
93:II	16860	2157	12.79	900.3	115.5	12.83
93:III	11782	1569	13.32	779.0	92.2	11.84
93:IV	11653	1535	13.17	870.9	151.0	17.34
94:I	17302	2166	12.52	667.8	110.0	16.62
94:II	12388	1507	12.16	1166.6	134.9	11.56
94:III	6731	873	12.97	979.9	117.2	11.96
94:IV	5622	715	12.72	990.9	110.6	11.16
95:I	9363	1222	13.05	777.5	133.1	17.12
95:II	7560	950	12.57	1239.1	178.6	14.41
95:III	5020	659	13.13	1071.0	167.1	15.60
95:IV	4962	656	13.22	1120.7	182.5	16.28

Sources:

Unemployment data: Danmarks Statistik: various issues of *Statistiske Efterretninger: Arbejdsmarkedet: Arbejdsløsheden X. Kvartal 19YY.*

Building-activity data: Danmarks Statistik: various issues of *Statistiske Efterretninger: Bygge- og Anlægsvirksomhed: Byggevirksomheden X. Kvartal 19YY*