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Financial effects in historic consumption and investment functions*

Engelbert Stockhammer[φ] *and Erik Bengtsson*[ϕ]

Abstract

The global financial crisis has highlighted the importance of financial factors on economic performance. Most of the existing research analyses the post-World War 2 experience, and especially the 1980s onwards. This paper investigates the effects of stock prices, real estate prices and debt on consumption and investment expenditures by estimating consumption and investment equations for long historic datasets with about 100 years of data for Britain, France, Norway and Sweden. We find positive debt effects on consumption in three of four countries, but no consistent effects of share prices and house prices. We find positive effects of share prices on investment in all four countries. Effects are stronger in more market-based Britain than in more state-oriented France. For France, Sweden and Norway we find some evidence that effects of financial variables were weaker in the postwar period 1945-80. These findings suggest that the institutional context matters for how financial variables affect economic activity.

Keywords: wealth effects, asset prices, consumption, investment, macroeconomic history

JEL codes: E1, E21, E22, G1, N1

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1. Introduction

What causes variations in the central macroeconomic variables, consumption and investment? In a time of drastically growing house prices in the wealthy economies (Knoll, Schularick, and Steger 2017), as well as growing but fluctuating stock prices (Shiller 2005), the impact of asset prices on the real economy has become an important debate in economics. We may ask questions such as: what happens with consumption when house prices grow; or does growing household debt increase consumption, or do growing stock prices lead to higher investment rates? There is a lively literature on these issues. So Poterba and Samwick (1995, p. 295), writing during the economic boom in the US in the mid-1990s, could state that, "The bull market of the last year has raised the total value of corporate stock in the United States by nearly a trillion dollars.", and ask, among other questions, "How do rising stock prices affect consumer spending?" In our times of great asset market growth and turbulence, this kind of question is important.[1]

Most of the macroeconomic research on the effects of asset prices on consumption and investment, i.e. wealth effects, has used relatively short time series, focusing especially on the period since the 1970s and 1980s. There is a growing, but presently still modest research interest in earlier historic experience. Jorda et al (2016) have presented data on debt and real estate prices for long time periods and Jordà, Schularick, and Taylor (2013) analyse the effect of credit growth on subsequent recessions. Stockhammer, Rabinovich, and Reddy (2018) estimate demand regimes using more than a hundred years of data, focussing on effects of income distribution and net private wealth. In this paper, as we use long macroeconomic time series from recent historical national accounts research to estimate consumption and investment equations with a century or more of data for four countries: Britain (1875–2010), France (1896–2010), Norway (1910–2010) and Sweden (1900–2010). The contribution of the paper is thus to present estimates of wealth and debt effects for much longer periods than the existing literature, covering very different macroeconomic regimes and contexts than the post-1980 deregulated, "financialized" economies. The countries are chosen due to the availability of long-run data, but they also represent different types of growth regimes and financial systems. Britain is an archetypical case of a stock market-based financial system (Hall and Soskice 2001), while France is classified as a bank-based system.[2] Norway is placed in the market-based category

[1] In the 1990s, after financial deregulation-induced credit booms, conventional models of consumption broke down (Eitrheim, Jansen, and Nymoen 2002, p. 40). Conversely, the large drop in stock market values in 1973–75 stimulated discussion of its depressive effects on consumption (Bosworth 1975).

[2] Even though there is debate on whether the country in the 1990s moved to a market-based system (Bertrero 1994).

while Sweden is in the bank-based category (Ludwig and Slok 2004). In terms of welfare state regimes, Britain is a liberal system, France a Continental European one, and Norway and Sweden are archetypical Social Democratic welfare regimes (Esping-Andersen 1990). Thus, the country sample, although relatively small, covers several distinct institutional configurations. Our combination of a rather diverse, if small, country sample and long time periods allows us to investigate wealth effects in a variety of settings.

The paper is structured as follows. Section 2 reviews the literature. Section 3 presents the data which we use. Section 4 presents our empirical results, and in section 5 we draw the conclusions.

2. Literature review: financial effects in historical perspective

Wealth effects on consumption

The standard approach to wealth effects is the life cycle model developed especially by Franco Modigliani in the 1960s and 1970s. Households are expected to vary their savings and consumption rates over the life cycle to keep their consumption and living standards relatively constant even as current income varies from the prime of working age to the pension income of a pensioner. In addition to current income, households also consume out of their wealth; the question is to which degree. Modigliani's (1971) rule of thumb assumption was that households consume about five cents extra for one dollar more of wealth (Cf. Poterba (2000) and Davis and Palumbo (2001).) The five cents to the dollar rule of thumb still has support (Fair 2017), even though some researchers would lower the benchmark to three to four cents (Ludvigson and Steindel 1999).[3]

In the 2000s, the literature on wealth effects has proliferated, focusing on two types of wealth: housing assets, and stocks. Papers such as Poterba and Samwick (1995) were explicitly motivated by the post-1980s stock market rallies, but interest in house prices has increased recently as housing has become a booming sector (cf. Grossman and Steger 2017). The then chairman of the Federal Reserve Alan Greenspan pointed out in 2001 that the marginal propensity to consume should be higher out of housing wealth than out of stock market wealth

[3] There is a discussion of whether the estimated effects are causal or not. Poterba and Samwick (1995) argue that financial effects (i.e. rising stock prices quarter t correlated with more investment quarter t+1) are really leading indicators effects. Dynan and Maki (2001) use US consumer surveys to investigate the issue and draw the opposite conclusion, that wealth effects (out of stock prices) are real and not just a spurious correlation.

(Cf. Ludwig and Slok 2004.) A string of studies has since then considered both house prices and stock prices, with the possibility for differential effects of the two asset types.

Case, Quigley, and Shiller (2005) across countries and across US states since the 1980s find significant effects of housing wealth on consumption (internationally 0.10, in the US 0.05) but not of stock prices. The opposite argument, of no housing wealth effects, is represented by Buiter (2010) who claims that "housing wealth isn't wealth". According to Buiter, the increased wealth of house-owners is counteracted by the relative loss of renters, so that increasing house prices in aggregate have no expansionary effect on the economy.[4] Studies of effects of housing wealth do find that the interaction between house prices and borrowing matters, in the sense that households' need to save for the down payment can restrain consumption (Lindner 2014), while borrowing against the rising price of the house can increase consumption (Mian and Sufi 2014). These studies tend to find larger effects of house prices after c. 1985, as financial deregulation has allowed for greater borrowing (Goodhart and Hofmann 2008; Slacalek 2009).[5] There might also be differences between countries. Ludwig and Slok (2004) analyse a panel of OECD countries in the 1980s and 1990s and find higher responsiveness of consumption changes in stock prices in countries with a market-based financial system than in countries with bank-based systems. House prices on the other hand have an expansionary effect of consumption in both bank-based and market-based financial systems, at least in the 1990s. Slacalek (2009) similarily finds stronger financial wealth effects in market-based and Anglo-Saxon economies.

Like asset prices, the interest in household debt among researchers has increased since the 1990s, as household indebtedness has grown (cf. Zinman 2015). The debt stock is expected to restrain consumption by increasing interest payments, which decreases the incomes disposable for new consumption. At the same time, the flow of debt can increase consumption, as people take up new loans to consume. In other words, it is essential to investigate this variable's effect on consumption and investment in levels as well as in differences. Several studies have emphasized household debt and how, when house prices fall, the deleveraging of households deepen recessions (Eggertsson and Krugman 2012; Mian, Rao, and Sufi 2013; Jordà, Schularick, and Taylor 2014). Household debt is intimately related to asset prices,

[4] Campbell and Cocco (2007) look at the UK and find great heterogeneity in the effect of rising house prices, with older house owners consuming more, while young renters are not affected at all. On the aggregate, the question is of course the size and importance of the older house owners' effect.

[5] Jordà, Schularick, and Taylor (2014) map the development of house prices and mortgage credit in a panel of countries since 1870. They stress especially the increasing importance of mortgage credit in the macroeconomy post-WW2.

especially house prices, and Slacalek (2009) argues that house prices have become more important determinants of investment since the 1980s precisely because of the growing possibility to mortgage one's house.

The extant literature on wealth effects almost exclusively focuses on the present period, going back to the 1980s or so. However, there are good reasons to expect that wealth effects may vary over time. Poterba and Samwick (1995, p. 341) claim that the marginal propensity to consume out of wealth was low in the interwar period. One key reason why effects may vary over time is the changing patterns in asset ownership. One researcher has claimed that by 1870, Britain had become a 'stock-and-bondholding aristocracy, measuring income in dividends and wealth in the quotations of the Stock Exchange' (cited in Rutterford et al. 2011, p. 127.). We may on the other hand question how broadly shares are held and how the consumption functions of the share-holding groups differ from the average in the population. Acheson, Campbell, and Turner (2017) map the rather exclusive group who held shares in Victorian Britain. Poterba and Samwick (1995) show that stock ownership in the US from 1983 to 1992 was still very unequal, but decreasing. The 0.5 per cent of stockholders who owned the most stock owned 55 percent of the total in 1983, and 37 percent in 1992. In other words, we may expect stronger effects of stock price appreciation on consumption in the late twentieth century than in the first half of the century, as the ownership of stocks was likely more widespread in the latter period. On the other hand, we may also expect weaker effects of stock prices than of house prices even in the latter period, as stock ownership is more unequal than home ownership.

Investment

There are several reasons to expect effects of asset prices, especially stock prices, on investment. Morck, Shleifer, and Vishny (1990) discuss four hypotheses.[6] One, the passive informant hypothesis says that the stock market reflects information about the investment environment, without in itself adding new knowledge. For this reason, it will be correlated with investment. Second, the active informant hypothesis says that managers "rely on the stock market as a source of information when making investment decisions" (Gjerde et al 2001, p. 566). Three, the stock market can affect investment by affecting the cost of new stock issuance. Four, the stock market pressure hypothesis says that the stock market evaluation affects managers' behaviour by affecting their incentives. In Chapter 12 of the *General Theory*, Keynes

[6] See also the discussion in Davis (2010). Chirinko (1993) provides a food, if dated, overall discussion of investment and its determinants

used precisely the value of share prices on the stock exchange as the measure of expected profitability of investment (Lopez and Mott 1999, p. 297).

It has been debated in economics to which degree profitability affects corporate investment. In Hall and Jorgenson's (1967) neoclassical model, the relevant variable of consideration for corporations was a cost of capital which was set in the securities markets, i.e. external to the firm (Fazzari, Hubbard, and Petersen 1988, p. 144-145; Gordon 1992). This economy-wide cost of capital will be measured in our empirical investigation by the real interest rate.

The empirical evidence is not very clear cut. On the interest rate, neither Kothari, Lewellen, and Warner (2016) nor Gordon and Veitch (1986) find any effect on investment in the US. Blanchard, Rhee, and Summers (1993) investigate the relationship between stock market valuation and investment from the 1920s to the 1980s in the United States, and find that there is very little relation between the two; the same non-result for profits is found in a study of Norway 1952-1995 (Gjerde, Knivsflå, and Sættem 2001) while a study of Dutch industrial investment patterns 1950-1987 found that profits indeed lead investments (Van Ees et al 1997). Kothari, Lewellen, and Warner (2016) investigate corporate investment in the US 1952-2010 and find that higher stock prices are associated with more investment but Gordon and Veitch (1986) investigate investment in the US business cycle 1919-1983 and claim that investment, especially buildings investment, in line with a Keynesian view, is very hard to pin down econometrically. They argue that investment is an autonomous factor and drives the business cycle. The investment boom of the 1920s and subsequent slump of the 1930s was in their opinion influenced by speculation and "animal spirits" a la Keynes, as well as a "Schumpeterian" factor of a bundling of innovations which broke through in that decade (Gordon and Veitch, pp. 326-327).

The country context

The wealth effects literature typically investigates rather short periods, and has until recently assumed stable effects everywhere, anywhere. However, as shown in several studies, the deregulation period of the 1980s means that wealth effects might differ over time. The same goes for the country context. Peter Hall (1986) in a classic study emphasized that "Since 1918, industries in Britain have essentially been asked to rationalize themselves." (p. 51) In France, on the other hand, the state in the postwar period took a very active role in steering industry, with nationalized banks and the Bank of France actively steering private investment (p. 153).

Equally, in Sweden in the postwar period, the finance ministry and the politically steered central bank did not hesitate to approach a semi-planned economy, with very strong regulation of profits and investments (Pontusson 1992); Katzenstein (1985, p. 61) in a classic study refers to this as "indicative planning" while noting that in Norway, interventionism was even more advanced. In both France and Sweden, and especially in Sweden (Belfrage and Kallifatides 2018), such regulations and planning institutions have been dismantled since the early 1980s. Thus, we have good reasons to expect different financial effects between countries and across time, especially on investment.

3. Data and method

In the wealth effects literature, two types of wealth measures are used. One is the direct ownership of households, derived from household surveys (i.e. Poterba and Samwick 1995; Dynan and Maki 2001). The other, utilized here, is asset price indices, as used by for example Ludwig and Slok (2004). This is of course not a direct measure of wealth, but the growth of the house price index and the stock price index should capture the growth of these two types of wealth well, because prices will usually are more volatile than quantities (cf. Lettau and Ludvigson 2004).

Beyond the two types of wealth as our major independent variables, we also use control variables. GDP is used as the indicator of income.[7] The real interest rate is a key macroeconomic variable which is usually controlled for in the literature, even if its estimated effects typically are small or non-existent (Campbell and Mankiw 1991; Slacalek 2009).

We utilize data compiled in the last ten to fifteen years by economic historians working within extensive projects on historical national accounts, sponsored not the least by central banks. For Britain we get GDP data, interest rates, debt data, the wage share, house prices, stock prices and CPI all from the Bank of England dataset "Three centuries of British Macroeconomic Data" (Hills, Thomas, and Dimsdale 2010). For France we use Piketty and Zucman's (2014) compilation of historical national accounts, and take financial series from the cross-national studies of Jordà et al (2016) and Knoll et al (2017).[8] For Norway we get data are mostly from

[7] Tthe marginal propensity to consume varies by income source, so for example Davis and Palumbo (2001, p. 33) find that it is lower for capital incomes than for other incomes. For this reason, in robustness checks (not reported) we include the wage share, which measures the share of national income which accrues to wage earners.The results regarding wealth effects do not change.

[8] For France, we have linearly interpolated the real exchange rate 1915-18 and the interest rate 1915-21. Other than that, the series that we use are quite coherent and complete.

two massive books on historical national accounts: GDP and its components from Grytten (2004a), the wage share from Bengtsson and Waldenström (2018), interest rates from Eitrheim and Klovland (2007), debt[9] from Eitrheim, Gerdrup, and Klovland (2004), house prices from Eitrheim and Erlandsen (2004), share prices from Klovland (2004), and CPI from Grytten (2004b). For Sweden we take GDP and its components from Krantz and Schön (2015), the wage share from Edvinsson (2005) supplemented by AMECO data after 2000, interest rates from Waldenström (2014), debt from Ahnland (2015), house prices from Söderberg, Blöndal, and Edvinsson (2014), share prices from Waldenström (2014), and CPI from Edvinsson and Söderberg (2010).

Our baseline debt variable is total outstanding loans to the private sector. To nuance the analysis, in the consumption models we use mortgage debt, which should especially affect consumer behaviour, and in the investment models we include mortgage credit and business credit separately. This is made possible by the Jordà, Schularick, and Taylor (2016) Macrohistory database. For Britain both these variables are available for 1880-2013. For France however business debt is only available since 1958. There we can use (a) mortgages and (b) total loans to non-financial sector since 1900, and calculate a proxy for business debt as (b) less (a). However, it should be noted that mortgages take the value 0.0 until 1931. Total debt is missing 1939-1945 and mortgages are missing also 1934-38. For this reason, in France we can perform the disaggregated debt analysis only for the 1948-2013 period. For Norway, total non-financial debt and mortgage debt are both available since further back than 1910, when our investigation begins. Separate business debt however is only available since 1977. Thus again we proxy business debt as total debt minus mortgages. For Sweden, mortgage debt and total debt are available since 1900 from Ahnland (2015).

Econometric methodology

Our baseline consumption and investment equations are

$$C = C(Y, PH, PS, DHH)$$

With expected signs C_Y, C_{PH}, $C_{PS} > 0$, $C_{DHH} < 0$

$$I = I(Y, PH, PS, DBUS, i)$$

With expected signs I_Y, I_{PH}, $I_{PS} > 0$, $I_{DBUS} < 0$

[9] We use the concepts ”debt” and ”credit” interchangably.

Where *C*, *I*, *Y*, *PH*, *PS*, *D*, *DHH*, *DBUS* and *i* stand for consumption, investment, GDP, house prices, stock prices, total debt, household debt, business debt and the interest rate respectively. All variables are inflation adjusted.

The macroeconomic variables that we work with are almost all trended, which is also revealed by a standard test for unit roots, the augmented Dickey-Fuller Test. For this reason we must account for the stochastic trend. We use as error correction models where we find evidence that the variables are cointegrated (cf. Banerjee, Dolado, and Mestre 1998)[10] and first difference specifications otherwise. We experiment with the lag structure and allow for up to two lags of the differences. All variables involved bar the interest rate are in logarithm form. The full error correction model for consumption is:

Equation 1. $\Delta \log(C) = \rho \log(C_{t-1}) + \beta_1 \log(Y_{t-1}) + \beta_2 \log(DHH_{t-1}) + \beta_3 log(PS_{t-1}) + \beta_4 log(PH_{t-1}) + \sigma_{1n} \sum_n \Delta \log(Y_{t-n}) + \sigma_{2n} \sum_n \Delta \log(DHH_{t-n}) + \sigma_{3n} \sum_n \Delta \log(PS_{t-n}) + \sigma_{4n} \sum_n \Delta \log(PH_{t-n}) + \alpha + e_t$

For investment, we use the same model but with the real interest rate included, and with corporate debt instead of household debt. The long-run effects are calculated as the coefficient divided by the coefficient of the lagged dependent variable, $\beta_j/-\rho$ in the terms of Equation 1 (De Boef and Keele 2008). When the variables are not cointegrated, we use a distributed lag version of first difference models. We experiment with different lag structures and include up to three lags of all independent variables. Overall, effects seem to quickly wither away after one year's lag.[11] We employ a test down approach where we decrease the number of lags to the ones which are statistically significant at at least the 10 per cent level; the tables in the Appendix show results with a fuller set of lags, including contemporaneous effects and two lags.

Year dummies are used for years during the World Wars when the macroeconomic variables were strongly influence by wartime measures. The year dummies have been chosen based on a first stage estimation for the full sample with dummies for each of the war years and the immediate aftermath (1914-1920 and 1939-1946). Those dummies which were statistical significanct at the 10 per cent level or higher are retained.

[10] Note that the standard critical values do not apply to error correction coefficient. Banerjee et al (1998, Table 1) report that a with T=100 and 5 regressors, the critical value is – 3.85 for the 90 % level.
[11] Goodhart and Hoffmann (2008), who use quarterly data, use four lags. Kothari et al. (2016, p. 13) who use quarterly data for the US claim that the effects of profits and stock prices on investment play out in up to a year and a half.

For each country we present several specifications. We first present results for different lag structures. We present specifications with and without contemporaneous effects, because the former might subject to endogeneity problems. Then we report results for interaction of the financial variables with dummy variables for the postwar (1945-80) and post-1980 (1980-2010) periods to see whether the effects change. We will refer to these interactions as period-specific effects. The postwar period was a high growth period with relatively regulated financial sector (i.e. Katzenstein, 1985; Hall, 1986; Pontusson, 1992), whereas the post-1980 period is on of financial deregulation. We expect financial variables to have larger effects in the post-1980 period.

4. Results

Table 1 show the results for consumption for Britain. We fail to find evidence for cointegration, so we estimate first differences models. Specifications 2 through 5 include contemporaneous effects and period-specific effects for each of the three key independent variables; first one at a time (specifications 2-4) and then interactions for all three in the same specification (5). Specification 6 drops the contemporaneous effects as these might suffer from endogeneity problems; this does not change the substantive results. Results are very similar across specifications. We thus prefer specification (1) as more parsimonious. We consistently find statistically significant effects for share prices and for house prices. For example in specification (1) share prices (with one lag) are statistically significant at the 1% level and house prices are statistically significant at the 5% level contemporaneously. The respective coefficient estimates for stock prices are 0.04 and for house prices 0.05 and 0.04, giving a total effect of 5 per cent for stock prices and 9 per cent for house prices. This means that coefficient estimates are in similar order of magnitude as previous research (for more recent time periods) has reported. We also find statistically significant effects of household debt. These effects are positive for contemporaneous effects and negative for the first lag. The positive effects are somewhat larger, so that the total effect is around +0.06. Theory would have suggested a negative effect. This suggests that households are credit constrained.

Table 1. Wealth effects on consumption in Britain

	(1)	(2)	(3)	(4)	(5)	(6)
Δ Y t	0.37***	0.30***	0.26***	0.35***	0.27***	
	(4.93)	(3.88)	(3.59)	(4.75)	(3.78)	
Δ Y t -1	-0.17**	-0.01	-0.01	-0.18**	-0.13*	0.02
	(-2.40)	(-0.25)	(-0.16)	(-2.58)	(-1.82)	(0.29)
Δ Y t-2	0.12***			0.13***	0.11**	0.05
	(2.86)			(2.97)	(2.61)	(0.98)
Δ Stock prices t-1	0.04***	0.05***	0.04***	0.04***	0.06***	0.05***
	(5.06)	(4.68)	(4.98)	(4.78)	(5.69)	(5.03)
Δ Stock prices t-1 * postwar		-0.03			-0.04**	
		(-1.33)			(-2.19)	
Δ Stock prices t-1 * post-1980		-0.02			-0.04*	
		(-1.18)			(-1.85)	
Δ House prices t	0.05**	0.05**	-0.04	0.04*	-0.04	
	(2.45)	(2.35)	(-1.25)	(1.90)	(-1.19)	
Δ House prices t * postwar			0.14***		0.12**	
			(2.80)		(2.18)	
Δ House prices t * post-1980			0.18***		0.19***	
			(3.74)		(3.73)	
Δ House prices t-1	0.04**	0.04*	0.01	0.03	0.01	0.07***
	(2.00)	(1.67)	(0.27)	(1.39)	(0.64)	(2.84)
Δ Household debt t	0.13***	0.14***	0.12***	0.11***	0.15***	
	(3.80)	(3.96)	(3.87)	(2.93)	(4.01)	
Δ Household debt t * postwar				0.10	0.07	
				(1.05)	(0.71)	
Δ Household debt t * post-1980				0.03	-0.03	
				(0.67)	(-0.55)	
Δ Household debt t-1	-0.07**	-0.10***	-0.09***	-0.06*	-0.09***	0.02
	(-2.31)	(-3.12)	(-3.01)	(-1.93)	(-2.92)	(0.89)
Postwar dummy		0.01**	0.01**	0.00	0.00	
		(2.18)	(2.30)	(0.41)	(0.75)	
Post-1980 dummy		0.01**	0.01	0.01	0.01*	
		(2.12)	(1.63)	(1.42)	(1.77)	
Constant	0.01***	0.01**	0.01***	0.01*	0.01**	0.02***
	(4.02)	(2.47)	(2.70)	(1.86)	(2.15)	(6.60)
AIC	-638	-633	-647	-640	-653	-591
Durbin-Watson d	1.87	2.04	2.07	1.95	1.91	1.83
Observations	117	117	117	117	117	118
Adjusted R-squared	0.79	0.79	0.81	0.80	0.83	0.66

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Year dummies for 1915, 1916, 1917 1919, 1920, 1941, 1945 and 1946 not reported.

Table 2 summarises results for investment. Again we fail to find sufficient evidence for cointegration and use first differences models. Because of autocorrelation problems we include a lagged dependent variable. We find strong contemporaneous demand effects. The expected positive effect of stock prices on investment are only found in three of the five specifications; the coefficient varies between 0.07 and 0.10. House prices have statistically signficant negative

(i.e. perverse) effects which are quite large, around -0.33. Credit expansion only has a statistically significant effect in one of the specifications. Interest rates have a small, but statistically significant negative effect on investment. The period-specific effects are limited to that stock prices have less effect after 1980 (specifications 2, 5) and that house prices appear to have a positive effect after 1980, unlike before that (specifications 3, 5). We conclude that overall, wealth effects on investment are weak in Britain. Given the changes in British political economy from the postwar period to the post-Thatcher period (Hall 1986), it is surprising that the effects do not vary more over time.

Table 2. Wealth effects on investment in Britain

	(1)	(2)	(3)	(4)	(5)
Δ Investment t -1	0.34***	0.32***	0.28***	0.29***	0.28***
	(5.66)	(4.93)	(4.43)	(4.41)	(4.40)
Δ Y t	1.08***	1.05***	0.84***	0.92***	0.85***
	(3.62)	(3.51)	(2.82)	(2.98)	(2.75)
Δ Y t -1	0.27	0.29	0.06	0.19	0.11
	(0.89)	(0.94)	(0.18)	(0.62)	(0.36)
Δ Y t-2	-0.55***	-0.57***	-0.50***	-0.55***	-0.54***
	(-3.25)	(-3.36)	(-3.02)	(-3.22)	(-3.13)
Δ Interest rate t -1	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
	(-4.68)	(-4.55)	(-4.84)	(-4.49)	(-4.74)
Δ Interest rate t-2	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
	(-2.72)	(-2.76)	(-3.32)	(-3.10)	(-3.24)
Δ Stock prices t-2	0.05	0.09**	0.07**	0.05	0.10**
	(1.46)	(2.23)	(2.02)	(1.41)	(2.45)
Δ Stock prices t-2 * postwar		-0.05			-0.04
		(-0.64)			(-0.45)
Δ Stock prices t-2 * post-1980		-0.16**			-0.16*
		(-1.99)			(-1.90)
Δ House prices t	0.08	0.06	0.04	0.09	-0.01
	(0.77)	(0.55)	(0.25)	(0.90)	(-0.07)
Δ House prices t * postwar			-0.29		-0.20
			(-1.33)		(-0.79)
Δ House prices t * post-1980			0.37*		0.36
			(1.75)		(1.47)
Δ House prices t-1	-0.32***	-0.31***	-0.33***	-0.35***	-0.34***
	(-3.25)	(-3.12)	(-3.35)	(-3.46)	(-3.34)
Δ Business debt t	0.10	0.10	0.14*	0.16	0.16
	(1.27)	(1.24)	(1.75)	(1.18)	(1.12)
Δ Business debt t * postwar				-0.18	-0.05
				(-1.06)	(-0.27)
Δ Business debt t * post-1980				0.10	0.05
				(0.59)	(0.24)
Postwar dummy		0.02	0.03**	0.03*	0.03**
		(1.39)	(2.20)	(1.98)	(2.06)
Post-1980 dummy		0.01	-0.01	0.00	-0.00
		(0.67)	(-0.42)	(0.00)	(-0.20)
Constant	-0.00	-0.01	-0.00	-0.00	-0.00
	(-0.34)	(-0.78)	(-0.11)	(-0.45)	(-0.12)
AIC	-304	-304	-311	-303	-308
Durbin-Watson d	1.94	1.91	1.97	1.99	1.99
Observations	117	117	117	117	117
Adjusted R-squared	0.78	0.78	0.80	0.78	0.80

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Year dummies for 1915, 1916, 1917, 1919, 1920, 1940. Including debt-to-GDP ratio does not make a difference; see Appendix Table Y.

For France we can only disaggregate debt after 1948. We thus first – Table 3, specifications 1–5 – estimate consumption as function of total private debt. Specifications 6-7 instead use only

household debt.[12] The t-value of the error correction term is below the critical value for cointegration. However, as the error correction term is in the plausible range, we still regard the ECM specification as useful. The long run effects of stock prices are ambigious; the period interactions in models 2 and 5 indicate a positive effect after 1945 (and a negative one before that), but in specifications 6 and 7, covering the 1948-2010 period, there are no effects at all. There are no stable short run effects. House prices have no stable effects in the short or long run. The stock of outstanding private debt does have statistically significant positive effects (specifications 1-4, statistically significant at the 5% and 1% level respectively). We would have expected negative effects. There is no effect of overall debt growth, but when we include only household debt (specifications 6-7), we find a statistically significant positive short-run effect on consumption, between 0.14 and 0.16.

France is typically seen as a very different type of capitalism to Britain – less stock market driven, and less financialized. While household debt has about the same effect on consumption in France as in Britain, stock prices seem indeed to have less effect on consumption in France. These findings accord with the analysis of the French economy as less stock market-driven than the British (Hall and Soskice 2001), and Ludwig and Slok's (2004, abstract) finding that "the long-run responsiveness of consumption to permanent changes in stock prices is higher for countries with a market-based financial system than for countries with a bank-based financial system".

[12] Since these specifications only encompass the years 1948 – 2010, it does not make sense to include both postwar and post-1980 dummies. Thus, we only include the post-1980 one.

Table 3. Wealth effects on consumption in France

sample	1900-2010					1948-2010	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Consumption t -1	-0.25**	-0.40**	-0.51***	-0.52***	-0.62***	-0.28**	-0.34*
	(-2.51)	(-2.62)	(-2.77)	(-2.78)	(-3.40)	(-2.57)	(-1.72)
Y t -1	0.16	0.21	0.36**	0.37**	0.39**	0.26**	0.29
	(1.61)	(1.52)	(2.22)	(2.22)	(2.41)	(2.38)	(1.52)
Stock prices t-1	0.01	-0.03	0.01	0.01	-0.07***	-0.00	0.01
	(1.32)	(-1.59)	(0.96)	(0.78)	(-2.86)	(-0.30)	(0.70)
Stock prices t-1 * postwar		0.05*			0.09**		
		(1.95)			(2.60)		
Stock prices t-1 * post-1980		0.07***			0.11***		-0.01
		(2.71)			(3.57)		(-0.50)
House prices t-1	-0.00	0.03**	-0.01	-0.00	0.03**	-0.00	-0.01
	(-0.31)	(2.03)	(-0.51)	(-0.17)	(2.04)	(-0.16)	(-0.70)
House prices t-1 * postwar			0.02		0.00		
			(1.06)		(0.03)		
House prices t-1 * post-1980			0.03		-0.02		-0.04
			(0.89)		(-0.49)		(-1.17)
Debt t-1	0.04**	0.03*	0.04**	0.04**	-0.01		
	(2.60)	(1.74)	(2.22)	(2.07)	(-0.24)		
Debt t-1 * postwar				0.02	0.05		
				(0.90)	(1.26)		
Debt t-1 * post-1980				0.04	0.08		
				(1.02)	(1.43)		
Household debt t-1						-0.01	0.02
						(-0.39)	(0.78)
Household debt t-1 * post-1980							0.01
							(0.45)
Δ Y t-1	-0.27**	-0.21*	-0.27**	-0.26**	-0.17	-0.09	-0.16
	(-2.40)	(-1.92)	(-2.37)	(-2.27)	(-1.55)	(-0.77)	(-1.35)
Δ Stock prices t-1	-0.01	-0.00	-0.00	-0.00	0.01	0.02**	0.01
	(-0.35)	(-0.13)	(-0.12)	(-0.19)	(0.61)	(2.21)	(1.48)
Δ House prices t-1	0.07	0.01	0.05	0.06	-0.01	0.03	0.03
	(1.17)	(0.25)	(0.91)	(1.01)	(-0.11)	(0.80)	(0.62)
Δ House prices t-2	-0.13***	-0.16***	-0.12***	-0.11**	-0.14***	-0.04	0.00
	(-3.16)	(-3.60)	(-2.65)	(-2.49)	(-3.27)	(-0.92)	(0.06)
Δ Debt t-1	-0.00	-0.01	0.01	0.00	0.00		
	(-0.10)	(-0.18)	(0.21)	(0.09)	(0.09)		
Δ Household debt t-1						0.14***	0.16***
						(3.30)	(3.31)
Postwar dummy		-0.22**	-0.07	-0.06	-0.53***		
		(-2.01)	(-1.13)	(-1.00)	(-3.13)		
Post-1980 dummy		-0.23**	-0.08	-0.11	-0.58***		0.09
		(-2.35)	(-0.63)	(-0.77)	(-2.90)		(0.68)
Constant	0.33***	0.99***	0.58***	0.59***	1.41***	0.04	0.08
	(3.43)	(4.42)	(3.63)	(3.66)	(5.12)	(0.47)	(0.44)
AIC	-408	-413	-405	-405	-414	-362	-359
Durbin-Watson d	2.33	2.30	2.24	2.23	2.29	2.11	2.11
Observations	96	96	96	96	96	60	60
Adjusted R-squared	0.63	0.66	0.63	0.63	0.68	0.64	0.64

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Year dummies for 1915, 1916. 1917. 1918, 1919, 1920 and 1921 not reported in specifications 1-5.

Table 4 reports the investment results for France. There is evidence for cointegration; thus we use error correction models. Specification 1 is the baseline; specifications 2-4 interacts the financial variables with the period dummies one at a time, and specification 5 includes interactions for all three. Both stock price and house price growth increase investment in the short run, by about 0.18 and 0.30 respectively. There are no stable long run effects; house prices and debt have statistically significant positive effects in specification 1 (0.20 and 0.23 respectively) but the effects are not statistically significant in the other models.[13]

[13] Results are very similar if we only use corporate investment (Appendix Table FR2), or only corporate debt instead of overall debt (Appendix Table FR3). Stock price growth increases investment by about 0.15 and house prices by a similar size, but distributed over a strong effect of growth year t-1 but a negative correction from year t-2. The levels of stock prices and debt sometimes have positive effects.

Table 4. Wealth effects on investment in France

	(1)	(2)	(3)	(4)	(5)
Investment t-1	-0.35***	-0.54***	-0.50***	-0.49***	-0.54***
	(-4.30)	(-5.45)	(-5.17)	(-5.10)	(-5.06)
Y t-1	0.18*	0.63***	0.47***	0.45***	0.61***
	(1.97)	(3.65)	(3.37)	(3.20)	(3.33)
Interest rate t-1	-0.00	-0.01**	-0.01**	-0.01**	-0.01*
	(-1.58)	(-2.39)	(-2.14)	(-2.01)	(-1.93)
Stock prices t-1	-0.01	0.06	-0.02	-0.02	0.04
	(-0.45)	(1.27)	(-0.63)	(-0.81)	(0.65)
Stock prices t-1 * postwar		-0.03			-0.02
		(-0.39)			(-0.24)
Stock prices t-1 * post-1980		-0.14*			-0.13
		(-1.82)			(-1.45)
House prices t-1	0.07**	0.01	0.05	0.05	0.01
	(2.15)	(0.32)	(1.34)	(1.63)	(0.11)
House prices t-1 * postwar			0.05		0.05
			(1.32)		(0.52)
House prices t-1 * post-1980			-0.01		-0.07
			(-0.16)		(-0.52)
Debt t-1	0.08**	0.05	0.03	0.03	0.04
	(2.14)	(1.23)	(0.74)	(0.68)	(0.79)
Debt t-1 * postwar				0.06	-0.01
				(1.37)	(-0.12)
Debt t-1 * post-1980				0.02	0.15
				(0.20)	(0.93)
Δ Y t -1	0.73***	0.66**	0.63**	0.65**	0.63**
	(2.69)	(2.49)	(2.32)	(2.41)	(2.31)
Δ Y t -2	0.94***	0.83***	0.85***	0.86***	0.84***
	(3.25)	(2.92)	(3.01)	(3.01)	(2.88)
Δ Interest rate t-1	0.00***	0.01***	0.00***	0.00***	0.01***
	(3.47)	(4.13)	(3.80)	(3.76)	(3.79)
Δ Stock prices t -1	0.18***	0.16***	0.18***	0.18***	0.17***
	(3.93)	(3.43)	(3.86)	(3.91)	(3.55)
Δ House prices t -1	0.28*	0.33*	0.30*	0.31*	0.30
	(1.88)	(1.92)	(1.86)	(1.78)	(1.53)
Δ Debt t -1	-0.08	-0.09	-0.07	-0.08	-0.08
	(-1.25)	(-1.41)	(-1.22)	(-1.24)	(-1.33)
Postwar dummy		0.18	-0.13	-0.13	0.01
		(0.62)	(-0.92)	(-0.97)	(0.04)
Post-1980 dummy		0.40	-0.01	-0.13	0.05
		(1.51)	(-0.04)	(-0.38)	(0.11)
Constant	0.05	-1.90**	-0.79*	-0.71	-1.64*
	(0.18)	(-2.52)	(-1.80)	(-1.56)	(-1.99)
AIC	-212	-216	-214	-213	-211
Durbin-Watson d	2.03	2.10	2.07	2.07	2.13
Observations	95	95	95	95	95
Adjusted R-squared	0.48	0.51	0.50	0.50	0.50

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. 1919 dummy not reported.

None of the effects of stock prices, house prices or debt vary over time – there are no such results stable across specifications. This is different from the results for Britain and indicates a greater stability in macroeconomic regime from the postwar years to the post-1980 period. Of course, French capitalism is not today the *dirigiste* regime of the 1950s and 1960s (Amable, Guillaud, and Palombarini 2012), but neither has it experienced a regime change as drastic as Thatcherism. Another interesting difference between Britain and France is that both consumption and investment behave more idiosyncratically in the latter country: the share of variation that our models can explain is much higher in Britain. (This despite the fact that we use first difference models for Britain and ECMs for France.) In Britain the adjusted R-squared for consumption and investment is around 0.80 while in France for consumption it's around 0.65 and for investment only around 0.50. There is more unexplained variation in France, possibly due to the larger importance of regulation and state interventionism there (cf. Hall 1986).

Table 5 reports consumption results for Norway. We fail to find evidence for cointegration and apply difference specifications. We test down from a model with 0, 1, 2 and 3 lags and arrive at specification 1 in Table 5.[14] Income is the most important driver and the contemporaneous effect is very large, around 0.75. Stock price growth increases consumption by about 0.03 and house price growth by 0.09. Household debt growth only has a significant effect (+0.11) when controlling for time-varying effects; in the postwar era, the effect of credit growth on consumption was *negative*. It appears that in the postwar period consumption was less governed by financial variables. Landsem (2016) in a study of Norway since 1975 found that a one percentage point increase in housing wealth increased consumption by 0.08 percent, while the same size increase in financial wealth in the shape of stocks and bonds increased consumption by 0.27 percent. Brodin and Nymoen (1992) on the other hand, with a quarterly sample 1968–1989 found that household wealth increased consumption by 0.27 p.p in the long run. We with our longer sample find much less effects on consumption, which might indicate that the large effects are of more recent vintage, post-mid-1980s financial deregulation.

[14] For the specification with all lags see Appendix Table NO1. For testing down of specifications without contemporaneous effects, see Appendix Table NO2.

Table 5. Wealth effects on consumption in Norway

	(1)	(2)	(3)	(4)	(5)
Δ Y t	0.75***	0.75***	0.73***	0.76***	0.74***
	(10.74)	(9.65)	(9.22)	(10.27)	(9.41)
Δ Stock prices t	0.02	0.02	0.02	0.02	0.01
	(1.63)	(1.22)	(1.32)	(1.39)	(1.14)
Δ Stock prices t-1	-0.01	-0.01	-0.00	-0.01	-0.00
	(-0.48)	(-0.56)	(-0.33)	(-0.49)	(-0.30)
Δ Stock prices t-2	0.03***	0.04*	0.03**	0.03**	0.04**
	(2.72)	(1.84)	(2.39)	(2.63)	(2.27)
Δ Stock prices t-2 * postwar		-0.03			-0.04
		(-0.69)			(-1.04)
Δ Stock prices t-2 * post-1980		-0.01			-0.02
		(-0.28)			(-0.64)
Δ House prices t	0.09***	0.09***	0.16***	0.07**	0.12*
	(3.38)	(3.31)	(2.65)	(2.57)	(1.96)
Δ House prices t * postwar			-0.07		-0.07
			(-0.88)		(-0.85)
Δ House prices t * post-1980			-0.09		-0.06
			(-1.23)		(-0.78)
Δ Household debt t-1	-0.04	-0.04	-0.04	-0.05*	-0.04
	(-1.63)	(-1.47)	(-1.29)	(-1.92)	(-1.56)
Δ Household debt t	0.02	0.02	0.01	0.03	0.02
	(0.71)	(0.65)	(0.27)	(0.79)	(0.64)
Δ Household debt t-1	0.06	0.06	0.05	0.11**	0.10*
	(1.36)	(1.32)	(1.06)	(2.22)	(1.92)
Δ Household debt t-1 * postwar				-0.23***	-0.23***
				(-2.88)	(-2.67)
Δ Household debt t-1 * post-1980				-0.01	0.00
				(-0.10)	(0.05)
Postwar dummy		0.01	0.01	0.02***	0.02***
		(0.94)	(1.34)	(2.88)	(2.79)
Post-1980 dummy		0.01	0.01	0.01	0.01
		(0.85)	(1.11)	(0.68)	(0.66)
Constant	-0.00	-0.01	-0.01	-0.01**	-0.01*
	(-1.26)	(-1.58)	(-1.41)	(-2.30)	(-1.97)
AIC	-433	-427	-428	-436	-431
Durbin-Watson d	1.97	2.05	1.93	1.95	1.93
Observations	87	87	87	87	87
Adjusted R-squared	0.79	0.78	0.78	0.80	0.80

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Year dummies for 1917 and 1919 not reported.

Results for investment are reported in Table 6.[15] Again we apply difference specifications because of lack of evidence for cointegration. There is a very strong accelerator effect, with contemporaneous effects of income above 1. Stock prices increase investment by about 0.25, spread out over immediate effects and the one year lag; these effects are statistically significant.

[15] For the testing down results from 0,1,2 and 3 lags, see Appendix Table NO3.

Neither house prices nor business debt have statistically significant effects. Gjerde, Knivsflå, and Sættem (2001) found no effects of the stock market on investments in Norway, in a study of 1952-1995. We on the other hand find an effect around 0.25, much in line with France (Table 4, cols. 1–4) and with Britain after 1980. There is also a time-varying effect in that house prices increase investment after 1980 but not before that.

Table 6. Wealth effects on investment in Norway

	(1)	(2)	(3)	(4)	(5)
Δ Y t	1.67***	1.57***	1.77***	1.60***	1.77***
	(6.37)	(5.48)	(5.79)	(5.57)	(5.89)
Δ Y t-1	0.52*	0.41	0.30	0.50*	0.36
	(1.93)	(1.41)	(1.08)	(1.68)	(1.29)
Δ Interest rate t	-0.01*	-0.01	-0.02**	-0.01*	-0.01*
	(-1.73)	(-1.49)	(-2.20)	(-1.82)	(-1.96)
Δ Stock prices t	0.09**	0.10**	0.10**	0.10**	0.09**
	(2.06)	(2.19)	(2.23)	(2.20)	(2.19)
Δ Stock prices t-1	0.15***	0.27***	0.15***	0.16***	0.24***
	(3.58)	(3.75)	(3.40)	(3.27)	(3.28)
Δ Stock prices t-1 * postwar		-0.05			-0.00
		(-0.31)			(-0.01)
Δ Stock prices t-1 * post-1980		-0.19**			-0.20**
		(-2.03)			(-2.12)
Δ House prices t	0.10	0.14	-0.18	0.11	-0.12
	(1.10)	(1.42)	(-1.07)	(1.20)	(-0.68)
Δ House prices t * postwar			0.17		0.10
			(0.70)		(0.39)
Δ House prices t * post-1980			0.64***		0.55**
			(2.96)		(2.57)
Δ Business debt t	-0.09	-0.02	-0.14	-0.06	-0.03
	(-0.93)	(-0.20)	(-1.48)	(-0.33)	(-0.15)
Δ Business debt t * postwar				-0.32	-0.32
				(-1.22)	(-1.26)
Δ Business debt t * post-1980				0.13	0.11
				(0.52)	(0.48)
Postwar dummy		-0.01	-0.00	0.02	0.01
		(-0.38)	(-0.07)	(0.70)	(0.53)
Post-1980 dummy		-0.02	-0.03	-0.02	-0.03
		(-0.85)	(-1.53)	(-1.01)	(-1.42)
Constant	-0.05***	-0.03	-0.03*	-0.04*	-0.04*
	(-3.26)	(-1.52)	(-1.76)	(-1.90)	(-1.76)
AIC	-207	-205	-211	-204	-213
Durbin-Watson d	2.02	2.13	2.24	2.05	2.29
Observations	87	87	87	87	87
Adjusted R-squared	0.80	0.81	0.82	0.81	0.83

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. 1918, 1919 and 1920 year dummies not reported.

Sweden is a small open economy much like the Norwegian, but with a higher degree of financialization and more stock market based (Ludwig and Slok 2004). Table 7 shows the results for consumption. The t-values do not strictly pass the cointegration test, but is reasonably close and the adjustment speed is plausible. Thus we proceed with the ECM. Column 1 presents baseline results[16], while columns 2-5 show tests for period-specific effects. While we find statistically significant effects for income, other level variables seem to have little effects. We find intermittently *negative*, i.e.perverse, effects of house and stock prices on consumption. These, however, are sensitive to the specification. Expanding mortgage debt is the only financial variable which through out has a statistically significant effect, increasing consumption by 0.06 to 0.08.[17]

In the previous literature, Chen (2006) for the 1980-2004 period with quarterly data finds significant effects of housing wealth on consumption (0.11) in the long run, but not in the short run. We do not find such effects. Berg and Bergström (1995) found for 1970-1992 that financial wealth was "crucial" in explaining consumption and that household debt mattered in the short run. However, they show that the results are driven by the period after the financial deregulation of 1985, after which it became easier to borrow against the house to increase consumption. Their short-run coefficients for financial wealth are 0.04 and 0.05, while that of housing wealth are 0.08 and 0.12, depending on model specification. Our results indicate that over the long run there were no such effects.

[16] For testing down see Appendix Table SE1.

[17] Using overall debt instead of mortgage debt (Appendix Table SE2), one gets about the same results: posiitve short run effect of around 0.08. The long-run effects are inconsistent but lean towards a negative effect (-0.18) of debt on consumption in the postwar period, and a positive effect (0.39) in the post-1980 period.

Table 7. Wealth effects on consumption in Sweden

	(1)	(2)	(3)	(4)	(5)
Consumption t -1	-0.17***	-0.22***	-0.16*	-0.15**	-0.23**
	(-2.92)	(-3.11)	(-1.94)	(-2.15)	(-2.61)
Y t -1	0.15***	0.22***	0.16**	0.15***	0.24***
	(3.20)	(3.75)	(2.56)	(2.84)	(3.20)
Stock prices t-1	-0.01*	-0.00	-0.01	-0.01	0.00
	(-1.77)	(-0.61)	(-0.78)	(-0.69)	(0.16)
Stock prices t-1 * postwar		-0.00			0.02
		(-0.10)			(0.90)
Stock prices t-1 * post-1980		-0.02*			-0.04***
		(-1.72)			(-2.81)
House prices t-1	-0.01	-0.01	-0.01	-0.02	-0.03
	(-1.30)	(-0.76)	(-0.85)	(-1.38)	(-1.24)
House prices t-1 * postwar			-0.00		0.04
			(-0.15)		(1.13)
House prices t-1 * post-1980			-0.00		-0.02
			(-0.06)		(-0.44)
Household debt t-1	-0.00	-0.01	-0.01	-0.01	-0.01
	(-0.22)	(-0.58)	(-0.58)	(-0.39)	(-0.72)
Household debt t-1 * postwar				-0.01	-0.03*
				(-0.64)	(-1.68)
Household debt t-1 * post-1980				0.01	0.08
				(0.27)	(1.61)
Δ Y t	0.87***	0.90***	0.88***	0.87***	0.91***
	(11.01)	(11.27)	(10.95)	(10.82)	(11.22)
Δ Stock prices t	-0.02**	-0.02*	-0.02	-0.02	-0.02
	(-2.00)	(-1.88)	(-1.53)	(-1.52)	(-1.35)
Δ House prices t-1	0.05	0.04	0.04	0.04	0.06
	(1.46)	(1.11)	(0.94)	(1.07)	(1.51)
Δ Household debt t-3	0.06*	0.06**	0.07**	0.07**	0.08**
	(1.85)	(2.01)	(2.10)	(2.23)	(2.37)
Postwar dummy		-0.01	0.00	0.04	0.09
		(-0.65)	(0.00)	(0.43)	(0.69)
Post-1980 dummy		-0.02	-0.00	-0.06	-0.63**
		(-1.29)	(-0.05)	(-0.34)	(-2.36)
Constant	0.15	0.09	0.06	0.07	0.09
	(1.36)	(0.60)	(0.43)	(0.51)	(0.64)
AIC	-504	-503	-499	-500	-506
Durbin-Watson d	1.93	1.86	1.95	1.98	1.88
Observations	107	107	107	107	107
Adjusted R-squared	0.74	0.74	0.73	0.73	0.76

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Year dummies for 1919, 1941, 1945 and 1946 not reported.

Table 8 reports results for investment for Sweden.[18] Most specifications pass the critical values for cointegration. We find strong demand effects on investment. Share prices increase

[18] For the testing down, see Appendix Table SE3.

investment by 0.20 in the long run, but in the post-war period the effect was negative, -0.17. Business debt has a negative effect on investment,[19] and its long-run elasticity (in specification 1) is -0.30, i.e. economically substantial. House prices have no effects. If we look at only corporate investment instead (Appendix Table SE4), then the positive effect of stock prices is only in the short run (0.08) while the negative long-run effect in the postwar period is still there. House prices have, perversely, negative short-run effects on corporate investment.

[19] Debt overall, i.e. including household debt, also has a negative effect on investment, but it turns strongly positive after 1980 (Appendix Table SE5).

Table 8. Wealth effects on investment in Sweden

	(1)	(2)	(3)	(4)	(5)
Investment t-1	-0.20***	-0.29***	-0.25***	-0.23***	-0.33***
	(-3.84)	(-4.46)	(-4.13)	(-3.78)	(-4.93)
Y t-1	0.32***	0.47***	0.37***	0.35***	0.53***
	(4.08)	(4.77)	(4.31)	(4.00)	(4.99)
Interest rate t-1	0.00	0.00	0.00	0.00	-0.00
	(1.05)	(0.71)	(0.29)	(1.11)	(-0.28)
Stock prices t-1	0.04**	0.08***	0.03**	0.03*	0.10***
	(2.34)	(2.98)	(2.12)	(1.87)	(3.03)
Stock prices t-1 * postwar		-0.13**			-0.14*
		(-2.30)			(-1.93)
Stock prices t-1 * post-1980		-0.05			-0.04
		(-1.55)			(-1.01)
House prices t-1	-0.01	-0.02	0.05	0.02	-0.00
	(-0.50)	(-0.48)	(1.36)	(0.46)	(-0.07)
House prices t-1 * postwar			-0.08		-0.12
			(-1.45)		(-1.26)
House prices t-1 * post-1980			-0.08*		-0.21**
			(-1.70)		(-2.03)
Corporate debt t-1	-0.06***	-0.09***	-0.07***	-0.07***	-0.09***
	(-2.86)	(-3.66)	(-2.88)	(-2.95)	(-3.33)
Corporate debt t-1 * postwar				-0.05	0.15
				(-0.69)	(1.14)
Corporate debt t-1 * post-1980				-0.02	0.23**
				(-0.29)	(2.24)
Δ Y t	1.55***	1.52***	1.44***	1.49***	1.53***
	(6.90)	(6.70)	(6.19)	(6.28)	(6.64)
Δ Y t-1	0.30	0.23	0.27	0.29	0.25
	(1.45)	(1.09)	(1.28)	(1.32)	(1.21)
Δ Y t-2	-0.63***	-0.74***	-0.76***	-0.70***	-0.79***
	(-3.11)	(-3.58)	(-3.58)	(-3.27)	(-3.83)
Δ Interest rate t	0.01***	0.01**	0.01**	0.02***	0.01
	(3.01)	(2.34)	(2.32)	(3.03)	(1.13)
Δ Interest rate t-1	0.01**	0.01*	0.01**	0.01**	0.01*
	(2.18)	(1.98)	(2.08)	(2.10)	(1.80)
Δ Stock prices t	0.04	0.02	0.02	0.03	0.02
	(1.37)	(0.55)	(0.62)	(0.93)	(0.75)
Δ House price t-1	-0.17*	-0.03	-0.12	-0.14	-0.02
	(-1.98)	(-0.30)	(-1.25)	(-1.46)	(-0.16)
Δ Corporate debt t	0.02	0.02	0.07	0.05	0.04
	(0.50)	(0.30)	(1.34)	(1.00)	(0.67)
Postwar dummy		-0.08	0.41	0.43	-0.76
		(-1.37)	(1.63)	(0.76)	(-0.94)
Post-1980 dummy		-0.01	0.46*	0.15	-0.99
		(-0.14)	(1.68)	(0.31)	(-1.65)
Constant	-0.94***	-1.38***	-1.27***	-1.07***	-1.67***
	(-3.52)	(-3.81)	(-3.58)	(-3.11)	(-4.42)
AIC	-305	-306	-303	-299	-307
Durbin-Watson d	1.80	1.75	1.79	1.80	1.79
Observations	108	108	108	108	108
Adjusted R-squared	0.68	0.69	0.69	0.67	0.70

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. 1915, 1916, 1919, 1940, 1945, 1946 year dummies not reported.

5. Conclusions

The paper has investigated the effect of financial variables on consumption and investment for four economies with long historical data. Overall, we find economically signficant effects for all countries, but statistically significance varies and is often sensitive to the specification. Comparison of results is complicated by the fact that we had to use ECM specifications for France and Sweden, but difference specifications for UK and Norway. We find that stock prices have short run positive effects on consumption in two of our countries: +0.05 in Britain and +0.04 in Norway. For these two countries, the result is very similar to Modigliani's old five cents to the dollar rule, as well as recent empirical research (Ludvigson and Steindel 1999; Ludwig and Slok 2004; Fair 2017). The effects of house prices on consumption in Britain and Norway are twice as large as the stock price effects, at +0.10. House prices also have positive effects on consumption in France, +0.05 in the long run. Household credit expansion increases consumption in Britain (+0.05), France (+0.15) and Sweden (+0.06). We find little direct support for the suggestions (Berg and Bergström 1995; Lindner 2014) that wealth effects on consumption have become bigger since the deregulations of the 1980s; only that stock prices have stronger effects after 1980 in France. But the rather consistent effects of household credit points to the connection between housing values and the availability of household credit as an important factor.

Table 9. Overview results

	Preferred Specification: table, column, model type	Main results	Period-specific effects
Consumption			
UK	1.5 Diff	Positive effects of PS (~0.05), PH (~0.10) and DHH (~0.05)	PS effects stronger before 1945 PH effects stronger after 1945 and especially after 1980
France	3.5 ECM	Long run positive effect of PH (0.05) Short run positive effect of DHH (~0.15)	PS has positive effect after 1945 (0.03), strongest after 1980 (0.06)
Norw	5.5 Diff	PS positive (0.04) PH positive (0.10)	DHH negative effect postwar, positive effect overall when controlling for this
Swe	7.5 ECM	Positive short-run effect of DHH (~0.08)	Possibly negative long run PS effect post-1980 (-0.17)
Investment			
UK	2.5 diff	Interest effect negative PS effects positive [~0.10) PH effects negative (~-0.30)	Negative effect of PS after 1980
France	4.5 ECM	Interest effect negative Short-run PS positive (~0.18) Short-run PH positive (~0.30)	Perhaps negative effect (-0.15) of PS post-1980, but not stable.
Norw	6.5 diff	PS positive (~0.30)	PH positive effect (~0.45) post-1980
Swe	8.5 ECM	PS positive in long run (0.20) DBUS negative (-0.30)	Positive PS effect overall turns negative postwar (-0.12) DBUS effect positive post-1980 (+.0.42)

As for investment, in all four countries it is boosted by stock prices. The effect varies from +0.10 in Britain, +0.18 in France, +0.25 in Norway and +0.20 in Sweden. House prices have a strong effect in France but not in other countries. Only for Sweden do we find the statistically signficant negative effects of the outstanding stock of business debt, as we would expect.

For several countries we find evidence of a changing role of financial variables over time. Interestingly, stock prices have no positive effect on investment in Sweden in the postwar period. This is consistent with the strong state-interventionism in investment decisions, and regulations of the stock market, in this period (Pontusson 1992). One fascinating aspect of the postwar findings for Sweden is that the point estimate of stock prices is estimated to have a *negative* effect on investment, of about -0.12. Given the way investment decisions were made in this country in the 1950s, 1960s and 1970s, with profits being forcibly saved in companies and put in special investment accounts from which the companies then were given tax incentives to release the funds in investments in business downturns – a hardcore Keynesian policy – it is in a way logical, but still a striking finding. This kind of regulation was abolished in the 1980s, so it makes sense that the negative relationship between stock prices and investment was limited to the 1945-1973 period.

Wealth effects differ between asset classes, over time and between countries. While share prices boost investment in all four countries, we find less consistent positive wealth effects on consumption. We find much more consistent evidence over time and across countries that credit expansions are associated with more consumption. We fail to find full support for Ludwig and Slok's (2004) and Slacalek's (2009) argument that the effect of stock prices on investment is stronger in market-based than in bank-based financial systems, but we do find that financial effects were small in some countries in the postwar period of regulated finance.

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Appendix

Appendix Table BR1. British consumption with a fuller set of lags and additional variables

	(1)	(2)	(3)	(4)	(5)	(6)	
Δ Y t	0.37***	0.33***	0.35***	0.34***	0.33***		
	(4.81)	(4.24)	(4.50)	(4.35)	(4.16)		
Δ Y t -1	-0.18**	-0.17**	-0.18**	-0.17**	-0.17**	0.02	0.04
	(-2.45)	(-2.32)	(-2.35)	(-2.31)	(-2.19)	(0.27)	(0.52)
Δ Y t-2	0.13***	0.13***	0.13***	0.12***	0.11**	0.05	0.02
	(2.90)	(3.05)	(2.95)	(2.75)	(2.44)	(0.92)	(0.45)
Δ Stock prices t	0.02**	0.02*	0.02*	0.01	0.02		
	(2.00)	(1.69)	(1.71)	(1.50)	(1.59)		
Δ Stock prices t-1	0.05***	0.06***	0.05***	0.05***	0.07***	0.05***	0.05***
	(5.50)	(5.22)	(5.30)	(5.15)	(5.59)	(5.01)	(4.37)
Δ Stock prices t-1 * postwar		-0.03*			-0.04*		
		(-1.68)			(-1.90)		
Δ Stock prices t-1 * post-1980		-0.03			-0.03		
		(-1.29)			(-1.59)		
Δ Stock prices t-2	0.01	0.01	0.01	0.01	0.01	0.01	-0.00
	(1.43)	(1.17)	(1.20)	(1.19)	(1.09)	(0.55)	(-0.01)
Δ House prices t	0.05*	0.05*	0.06**	0.04*	0.07**		
	(1.81)	(1.94)	(2.14)	(1.70)	(2.42)		
Δ House prices t-1	0.04	0.04	0.07**	0.04	0.09**	0.06**	0.05*
	(1.65)	(1.58)	(2.07)	(1.39)	(2.50)	(2.22)	(1.71)
Δ House prices t-1 * postwar			-0.08		-0.10		
			(-1.32)		(-1.63)		
Δ House prices t-1 * post-1980			-0.07		-0.10*		
			(-1.28)		(-1.89)		
Δ House prices t-2	0.03	0.02	0.04	0.02	0.03	0.01	0.02
	(1.48)	(0.95)	(1.48)	(0.86)	(1.37)	(0.41)	(0.58)
Δ Household debt t	0.10***	0.12***	0.10***	0.11***	0.12***		
	(2.83)	(3.34)	(2.79)	(2.99)	(3.19)		
Δ Household debt t-1	-0.05	-0.07*	-0.06	-0.06	-0.11**	0.01	0.02
	(-1.39)	(-1.84)	(-1.45)	(-1.31)	(-2.26)	(0.27)	(0.42)
Δ Household debt t-1 * postwar				-0.06	0.04		
				(-0.65)	(0.38)		
Δ Household debt t-1 * post-1980				0.03	0.07		
				(0.50)	(1.26)		
Δ Household debt t-2	-0.01	0.00	-0.01	-0.01	0.01	0.01	0.01
	(-0.28)	(0.03)	(-0.15)	(-0.24)	(0.41)	(0.29)	(0.18)
Δ Business credit t-1							0.03
							(1.20)
Δ Business credit t-2							-0.03
							(-1.65)
Postwar dummy		0.01**	0.01*	0.01	0.00		
		(2.03)	(1.96)	(1.66)	(0.68)		
Post-1980 dummy		0.00	0.00	0.00	0.00		
		(1.25)	(1.11)	(0.74)	(0.26)		
Constant	0.01***	0.01**	0.01**	0.01**	0.01***	0.02***	0.02***
	(4.17)	(2.27)	(2.28)	(2.13)	(2.75)	(6.57)	(6.69)
AIC	-631	-633	-631	-629	-631	-581	-581

BIC	-570	-561	-559	-558	-548	-531	-526
Durbin-Watson d	1.80	1.81	1.81	1.87	1.69	1.81	1.83
Observations	116	116	116	116	116	117	117
Adjusted R-squared	0.80	0.80	0.80	0.80	0.81	0.66	0.67

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Year dummies for 1915, 1916, 1917, 1919, 1920, 1940, 1941, 1945 and 1946 not reported.

Appendix Table BR2. British investment with full set of lags

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Δ Investment t -1	0.33***	0.23***	0.30***	0.24***	0.26***	0.35***	0.38***
	(5.28)	(3.28)	(4.48)	(3.51)	(3.89)	(5.41)	(6.02)
Δ Y t	0.97***	0.83**	0.82**	0.94***	0.84**		0.69**
	(2.97)	(2.44)	(2.41)	(2.93)	(2.57)		(2.04)
Δ Y t -1	0.30	-0.01	0.35	-0.03	0.14	0.89***	0.80**
	(0.92)	(-0.02)	(1.06)	(-0.07)	(0.43)	(3.22)	(2.21)
Δ Y t-2	-0.54***	-0.56***	-0.56***	-0.60***	-0.55***	-0.72***	-0.74***
	(-2.91)	(-2.93)	(-3.01)	(-3.29)	(-2.94)	(-3.94)	(-3.76)
Δ Stock prices t	0.02	0.01	0.02	0.01	0.02		0.02
	(0.65)	(0.23)	(0.56)	(0.16)	(0.56)		(0.57)
Δ Stock prices t-1	0.02	0.03	-0.00	0.03	0.05	0.06	0.04
	(0.54)	(0.47)	(-0.07)	(0.79)	(0.97)	(1.51)	(0.86)
Δ Stock prices t-1 * postwar		-0.02	-0.02				
		(-0.20)	(-0.26)				
Δ Stock prices t-1 * post-1980		0.08	0.13				
		(0.94)	(1.44)				
Δ Stock prices t-2	0.04	0.04	0.04	0.05	0.03	0.01	0.04
	(0.87)	(0.95)	(0.86)	(1.30)	(0.79)	(0.29)	(0.96)
Δ House prices t	0.06	0.13	0.06	0.14	0.11		0.08
	(0.55)	(1.14)	(0.51)	(1.19)	(1.00)		(0.75)
Δ House prices t-1	-0.26**	-0.31	-0.26**	-0.25	-0.25*	-0.18	-0.28**
	(-2.02)	(-1.65)	(-2.00)	(-1.43)	(-1.97)	(-1.62)	(-2.23)
Δ House prices t-1 * postwar		-0.29		-0.47*			
		(-0.96)		(-1.87)			
Δ House prices t-1 * post-1980		0.27		0.20			
		(0.99)		(0.88)			
Δ House prices t-2	-0.11	-0.11	-0.12	-0.08	-0.13	-0.18	-0.06
	(-0.94)	(-0.83)	(-0.96)	(-0.63)	(-1.11)	(-1.52)	(-0.54)
Δ Business debt t	0.07	0.07	0.09	0.05	0.03		0.12
	(0.75)	(0.67)	(0.96)	(0.56)	(0.31)		(1.13)
Δ Business debt t-1	0.06	0.20	0.04	0.08	0.21	0.11	-0.11
	(0.64)	(1.10)	(0.42)	(0.88)	(1.41)	(1.21)	(-1.00)
Δ Business debt t-1 * postwar		-0.20			-0.32*		
		(-0.96)			(-1.85)		
Δ Business debt t-1 * post-1980		-0.10			0.03		
		(-0.44)			(0.14)		
Δ Business debt t-2	0.02	0.01	0.01	0.00	0.00	0.02	0.04
	(0.27)	(0.08)	(0.13)	(0.06)	(0.03)	(0.30)	(0.41)
Δ Interest rate t	0.00	-0.00	-0.00	-0.00	0.00		-0.00
	(0.08)	(-0.15)	(-0.02)	(-0.45)	(0.15)		(-0.01)
Δ Interest rate t -1	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
	(-4.21)	(-3.90)	(-4.22)	(-4.29)	(-4.27)	(-4.51)	(-4.74)
Δ Interest rate t-2	-0.00**	-0.01***	-0.00**	-0.01***	-0.00***	-0.00**	-0.00**
	(-2.34)	(-3.14)	(-2.31)	(-3.24)	(-2.77)	(-2.26)	(-2.47)
Postwar dummy		0.04**	0.03*	0.04**	0.04**		
		(2.47)	(1.69)	(2.29)	(2.30)		
Post-1980 dummy		-0.01	0.00	-0.00	-0.00		
		(-0.40)	(0.21)	(-0.29)	(-0.09)		
Δ Debt/Y t							-0.01**
							(-1.99)
Δ Debt/Y t-1							0.02***

							(2.84)
Δ Debt/Y t-2							-0.01
							(-0.96)
Constant	-0.00	0.00	-0.01	0.00	-0.00	0.01	-0.00
	(-0.21)	(0.06)	(-0.64)	(0.00)	(-0.20)	(1.56)	(-0.28)
AIC	-293	-294	-292	-298	-296	-290	-298
BIC	-221	-200	-209	-215	-213	-232	-218
Durbin-Watson d	1.96	1.96	1.90	2.02	1.95	1.98	1.90
Observations	116	116	116	116	116	117	116
Adjusted R-squared	0.77	0.78	0.77	0.79	0.78	0.75	0.79

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Year dummies not reported. Household debt does not have any significant effect (results not reported).

Appendix Table FR1. Wealth effects on consumption in France with fuller set of lags

	(1)	(2)	(3)	(4)	(5)	(6)
sample		1900-2010			1948-2010	
Consumption t -1	-0.22**	-0.28**	-0.72***	-0.31***	-0.33***	-0.34*
	(-2.10)	(-2.52)	(-3.71)	(-3.04)	(-2.82)	(-1.74)
Y t -1	0.14	0.15	0.48***	0.30***	0.31**	0.29
	(1.31)	(1.33)	(2.82)	(2.94)	(2.62)	(1.55)
Stock prices t-1	0.01	0.02*	-0.06**	-0.00	-0.00	0.01
	(1.00)	(1.80)	(-2.25)	(-0.72)	(-0.38)	(0.71)
Stock prices t-1 * postwar			0.06*			
			(1.79)			
Stock prices t-1 * post-1980			0.10***			-0.01
			(2.89)			(-0.50)
House prices t-1	-0.00	0.00	0.02	-0.00	0.01	-0.01
	(-0.28)	(0.00)	(1.39)	(-0.59)	(0.81)	(-0.77)
House prices t-1 * postwar			-0.00			
			(-0.01)			
House prices t-1 * post-1980			-0.03			-0.03
			(-0.59)			(-1.19)
Debt t-1	0.03**	0.06***	-0.00			
	(2.25)	(3.54)	(-0.03)			
Debt t-1 * postwar			0.06			
			(1.41)			
Debt t-1 * post-1980			0.08			
			(1.36)			
Household debt t-1				-0.01	-0.02	0.02
				(-0.45)	(-0.84)	(0.79)
Household debt t-1 * post-1980						0.01
						(0.45)
Δ Y t -1	-0.30**	-0.35***	-0.22*	-0.12	-0.25*	-0.16
	(-2.51)	(-3.06)	(-1.86)	(-1.06)	(-1.70)	(-1.44)
Δ Y t-2		-0.23*			-0.07	
		(-1.85)			(-0.66)	
Δ Stock prices t-1	-0.00	0.00	0.01	0.02**	0.02**	0.01
	(-0.12)	(0.29)	(0.72)	(2.57)	(2.55)	(1.50)
Δ Stock prices t-2		0.02			0.01	
		(1.02)			(1.21)	
Δ House prices t-1	0.01	0.07	-0.03	0.01	0.08	0.03
	(0.13)	(1.19)	(-0.52)	(0.31)	(1.65)	(0.81)
Δ House prices t-2		-0.11**			-0.09*	
		(-2.61)			(-1.71)	
Δ Debt t-1	0.01	-0.02	0.01			
	(0.18)	(-0.69)	(0.41)			
Δ Debt t-2		-0.04				
		(-1.14)				
Δ Household debt t-1				0.15***	0.11**	0.16***
				(3.75)	(2.34)	(3.65)
Δ Household debt t-2					0.04	
					(0.79)	
Postwar dummy			-0.47**			
			(-2.61)			
Post-1980 dummy			-0.49**			0.08
			(-2.31)			(0.70)

Constant	0.32***	0.48***	1.35***	0.02	0.05	0.09
	(3.11)	(4.25)	(4.61)	(0.20)	(0.47)	(0.47)
AIC	-398	-400	-403	-363	-356	-361
BIC	-354	-347	-339	-342	-327	-332
Durbin-Watson d	2.22	2.19	2.11	2.03	2.04	2.11
Observations	96	94	96	60	59	60
Adjusted R-squared	0.59	0.65	0.63	0.64	0.65	0.65

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Year dummies in specifications 1-3 not reported: 1916, 1916, 1917, 1918, 1919, 1920, 1921.

Appendix Table FR2. Wealth effects on corporate investment only in France

	(1)	(2)	(3)	(4)	(5)	(6)
	1 lag	2 lags	inter PS	inter PH	inter credit	inter all
Investment t-1	-0.46***	-0.55***	-0.59***	-0.59***	-0.59***	-0.60***
	(-4.59)	(-4.79)	(-4.51)	(-4.66)	(-4.63)	(-4.08)
Y t-1	0.30**	0.33**	0.50**	0.43**	0.41**	0.49*
	(2.36)	(2.26)	(2.06)	(2.18)	(2.03)	(1.86)
Interest rate t-1	-0.01*	-0.00	-0.01	-0.01	-0.01	-0.01
	(-1.81)	(-0.77)	(-1.06)	(-1.03)	(-0.94)	(-0.88)
Stock prices t-1	0.04	0.08**	0.14*	0.07	0.06	0.09
	(1.40)	(2.49)	(1.82)	(1.61)	(1.49)	(1.01)
Stock prices t-1 * postwar			-0.04			-0.01
			(-0.39)			(-0.05)
Stock prices t-1 * post-1980			-0.10			-0.07
			(-0.89)			(-0.59)
House prices t-1	0.03	0.03	-0.01	0.01	0.02	-0.01
	(0.85)	(0.57)	(-0.16)	(0.15)	(0.33)	(-0.16)
House prices t-1 * postwar				0.06		0.03
				(1.09)		(0.24)
House prices t-1 * post-1980				0.05		-0.06
				(0.43)		(-0.31)
Credit t-1	0.09*	0.15**	0.14*	0.11	0.11	0.11
	(1.90)	(2.50)	(1.92)	(1.52)	(1.48)	(1.24)
Credit t-1 * postwar					0.07	0.03
					(1.17)	(0.17)
Credit t-1 * post-1980					0.08	0.18
					(0.65)	(0.79)
Δ Y t-1	1.11***	1.10***	1.02**	1.00**	1.03***	0.99**
	(3.08)	(3.00)	(2.64)	(2.57)	(2.68)	(2.48)
Δ Y t-2		0.88**	0.81*	0.81**	0.83**	0.81*
		(2.23)	(1.97)	(1.99)	(2.04)	(1.93)
Δ Interest rate t-1	0.00**	-0.00	0.00	0.00	0.00	0.00
	(2.50)	(-0.04)	(0.29)	(0.07)	(0.14)	(0.22)
Δ Interest rate t-2		-0.00	0.00	0.00	0.00	0.00
		(-0.17)	(0.22)	(0.07)	(0.01)	(0.11)
Δ Stock prices t-1	0.19***	0.15**	0.14**	0.17**	0.16**	0.16**
	(3.18)	(2.45)	(2.15)	(2.56)	(2.56)	(2.34)
Δ Stock prices t-2		-0.07	-0.07	-0.05	-0.05	-0.05
		(-1.17)	(-1.08)	(-0.68)	(-0.76)	(-0.65)
Δ House prices t-1	0.24	0.56*	0.59*	0.61**	0.60**	0.56*
	(1.28)	(1.98)	(1.98)	(2.08)	(2.03)	(1.71)
Δ House prices t-2		-0.43	-0.40	-0.46	-0.41	-0.40
		(-1.62)	(-1.33)	(-1.55)	(-1.37)	(-1.18)
Δ Credit t-1	-0.13*	-0.18**	-0.18*	-0.15*	-0.16*	-0.16
	(-1.71)	(-2.12)	(-1.95)	(-1.69)	(-1.76)	(-1.59)
Δ Credit t-2		-0.10	-0.10	-0.09	-0.09	-0.08
		(-1.23)	(-1.05)	(-0.98)	(-1.03)	(-0.86)
Postwar dummy			0.20	-0.19	-0.20	-0.14
			(0.47)	(-0.91)	(-0.99)	(-0.24)
Post-1980 dummy			0.34	-0.20	-0.30	-0.21
			(0.89)	(-0.41)	(-0.63)	(-0.31)
Constant	-0.61	-0.75	-1.75	-0.94	-0.86	-1.36

	(-1.44)	(-1.52)	(-1.50)	(-1.35)	(-1.17)	(-1.08)
Durbin-Watson d	2.18	2.14	2.15	2.14	2.16	2.17
AIC	-164	-163	-157	-158	-158	-152
BIC	-131	-118	-101	102	-102	-85
Observations	96	94	94	94	94	94
Adjusted R-squared	0.35	0.40	0.38	0.38	0.38	0.36

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1. 1919 dummy not reported.

Appendix Table FR3. Effects of corporate debt on investment in France

	Corporate investment only			All investment	
	(1)	(2)	(3)	(4)	(5)
	1 lag	2 lags	interactions	base	interactions
Investment t-1	-0.92***	-0.99***	-1.12***	-0.79***	-1.22***
	(-6.10)	(-5.02)	(-4.71)	(-4.78)	(-6.00)
Y t-1	0.66***	0.84***	0.80**	0.34***	0.34**
	(3.76)	(3.32)	(2.27)	(2.78)	(2.17)
Interest rate t-1	-0.02***	-0.01**	-0.02**	-0.01***	-0.01***
	(-3.80)	(-2.52)	(-2.59)	(-2.70)	(-2.95)
Stock prices t-1	0.07*	0.05	0.42	-0.01	0.31**
	(2.01)	(1.24)	(1.58)	(-0.46)	(2.04)
Stock prices t-1 * postwar			-0.51*		-0.50***
			(-1.88)		(-3.20)
Stock prices t-1 * post-1980			-0.41		-0.26
			(-1.46)		(-1.68)
House prices t-1	0.12**	0.14**	-0.63	0.22***	0.03
	(2.16)	(2.24)	(-0.47)	(4.29)	(0.04)
House prices t-1 * postwar			0.64		0.15
			(0.48)		(0.20)
House prices t-1 * post-1980			0.64		0.31
			(0.48)		(0.40)
Business credit t-1	0.10	0.02	1.05	0.12	0.66
	(0.99)	(0.20)	(1.52)	(1.64)	(1.64)
Business credit t-1 * postwar			-0.64		-0.11
			(-0.92)		(-0.26)
Business credit t-1 * post-1980			-0.63		-0.42
			(-0.85)		(-0.98)
Δ Y t-1	2.05**	1.79*	2.11	1.05*	1.50**
	(2.61)	(1.87)	(1.56)	(1.82)	(2.17)
Δ Y t-2		0.82	0.83	0.81	1.09*
		(0.97)	(0.88)	(1.42)	(1.96)
Δ Interest rate t-1	0.01	0.01	0.01*	0.00	0.00*
	(1.39)	(1.25)	(1.76)	(1.03)	(1.70)
Δ Interest rate t-2		-0.01	-0.00		
		(-1.49)	(-0.35)		
Δ Stock prices t-1	0.13*	0.16**	0.14	0.11**	0.05
	(2.00)	(2.31)	(1.64)	(2.47)	(0.98)
Δ Stock prices t-2		-0.02	0.01		
		(-0.34)	(0.08)		
Δ House prices t-1	0.14	0.12	0.22	0.28*	0.57***
	(0.66)	(0.31)	(0.56)	(1.82)	(3.67)
Δ House prices t-2		0.18	0.56		
		(0.45)	(1.19)		
Δ Business credit t-1	0.27	0.24	-0.03	0.19	0.01
	(1.56)	(1.25)	(-0.13)	(1.57)	(0.10)
Δ Business credit t-2		0.34	0.17		
		(1.64)	(0.72)		
Postwar dummy			4.30		2.19
			(0.62)		(0.57)
Post-1980 dummy			3.57		2.88
			(0.49)		(0.72)

Constant	-1.88***	-2.21***	-7.27	-0.03	-2.21
	(-3.93)	(-3.03)	(-1.07)	(-0.12)	(-0.56)
Durbin-Watson d	2.04	2.19	2.12	2.08	2.08
AIC	-128	-126	-125	-171	-188
BIC	-103	-91	-73	-144	-145
Observations	60	59	59	59	59
Adjusted R-squared	0.50	0.53	0.55	0.47	0.63

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix Table NO1. Wealth effects on consumption in Norway with full set of lags

	(1)
Δ Y t	0.80***
	(9.23)
Δ Y t -1	0.01
	(0.07)
Δ Y t-2	-0.05
	(-0.72)
Δ Y t-3	-0.04
	(-0.48)
Δ Stock prices t	0.02
	(1.18)
Δ Stock prices t-1	-0.01
	(-0.68)
Δ Stock prices t-2	0.03**
	(2.24)
Δ Stock prices t-3	0.01
	(1.10)
Δ House prices t	0.08***
	(2.86)
Δ Household debt t-1	-0.05*
	(-1.87)
Δ Household debt t-2	0.00
	(0.15)
Δ Household debt t-3	0.04
	(1.28)
Δ Household debt t	0.02
	(0.43)
Δ Household debt t-1	0.08
	(1.66)
Δ Household debt t-2	-0.01
	(-0.19)
Δ Household debt t-3	-0.02
	(-0.42)
Constant	-0.00
	(-0.44)
AIC	-407
Durbin-Watson d	2.02
Observations	83
Adjusted R-squared	0.76

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. 1917 and 1919 year dummies not reported.

Appendix Table NO2. Wealth effects on consumption in Norway with full set of lags but without contemporaneous effects

	(1) 123 lags	(2) Step 2	(3) Step 3	(4) interactions
Δ Y t-1	0.08	0.08	0.08	0.04
	(0.76)	(0.70)	(0.71)	(0.38)
Δ Y t-2	-0.12	-0.12	-0.10	-0.07
	(-1.03)	(-1.11)	(-0.87)	(-0.56)
Δ Y t-3	0.23**	0.25**	0.24**	0.29***
	(2.19)	(2.42)	(2.37)	(2.70)
Δ Stock prices t-1	0.03	0.03	0.04*	0.08***
	(1.33)	(1.54)	(1.97)	(2.68)
Δ Stock prices t-1 * postwar				-0.04
				(-0.61)
Δ Stock prices t-1 * post-1980				-0.05
				(-1.19)
Δ Stock prices t-2	0.02	0.02		
	(1.13)	(1.05)		
Δ Stock prices t-3	-0.01			
	(-0.43)			
Δ House prices t-1	-0.02	-0.02	-0.02	-0.00
	(-0.55)	(-0.56)	(-0.36)	(-0.05)
Δ House prices t-2	-0.03		-0.03	-0.00
	(-0.58)		(-0.62)	(-0.05)
Δ House prices t-2 * postwar				0.02
				(0.17)
Δ House prices t-2 * post-1980				-0.04
				(-0.39)
Δ House prices t-3	0.04			
	(0.87)			
Δ Household debt t-1	0.20***	0.20***	0.18***	0.31***
	(2.93)	(3.02)	(2.72)	(4.01)
Δ Household debt t-1 * postwar				-0.55***
				(-3.36)
Δ Household debt t-1 * post-1980				-0.12
				(-0.89)
Δ Household debt t-2	-0.15**	-0.16**	-0.15**	-0.22***
	(-2.23)	(-2.58)	(-2.22)	(-3.13)
Δ Household debt t-2	0.09	0.10*	0.12**	0.12**
	(1.48)	(1.90)	(2.27)	(2.37)
Postwar dummy				0.04***
				(3.11)
Post-1980 dummy				0.01
				(0.69)
Constant	0.01	0.01	0.01	0.00
	(1.25)	(1.23)	(1.15)	(0.35)
AIC	-334	-342	-345	-349
Durbin-Watson d	2.01	2.03	2.07	2.03
Observations	83	84	85	85
Adjusted R-squared	0.41	0.48	0.49	0.55

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. 1917 and 1919 year dummies not reported.

Appendix Table NO3. Testing down of Norwegian investment

	(1)	(2)	(3)	(4)
Δ Y t	2.35***	1.69***	1.69***	1.67***
	(6.78)	(6.38)	(6.40)	(6.37)
Δ Y t-1	0.73**	0.56*	0.57**	0.52*
	(2.20)	(1.97)	(2.02)	(1.93)
Δ Y t-2	-0.21			
	(-0.68)			
Δ Y t-3	-0.20			
	(-0.64)			
Δ Interest rate t	-0.01	-0.02*	-0.01*	-0.01*
	(-1.39)	(-1.83)	(-1.80)	(-1.73)
Δ Interest rate t-1	0.01			
	(0.78)			
Δ Interest rate t-2	-0.01			
	(-0.83)			
Δ Interest rate t-3	0.00			
	(0.27)			
Δ Stock prices t	0.08	0.09**	0.09**	0.09**
	(1.59)	(2.03)	(2.11)	(2.06)
Δ Stock prices t-1	0.12**	0.15***	0.15***	0.15***
	(2.26)	(3.51)	(3.61)	(3.58)
Δ Stock prices t-2	-0.00			
	(-0.09)			
Δ Stock prices t-3	0.03			
	(0.60)			
Δ House prices t	0.22*	0.09	0.10	0.10
	(1.96)	(0.95)	(1.05)	(1.10)
Δ House prices t-1	0.09	0.04		
	(0.83)	(0.48)		
Δ House prices t-2	0.08			
	(0.74)			
Δ House prices t-3	-0.00			
	(-0.03)			
Δ Business debt t	-0.18	-0.07	-0.07	-0.09
	(-1.39)	(-0.64)	(-0.67)	(-0.93)
Δ Business debt t-1	-0.18	-0.12	-0.12	
	(-1.46)	(-1.21)	(-1.19)	
Δ Business debt t-2	0.16	0.07	0.07	
	(1.32)	(0.63)	(0.65)	
Δ Business debt t-3	0.01			
	(0.06)			
Constant	-0.07**	-0.05***	-0.05***	-0.05***
	(-2.52)	(-3.31)	(-3.31)	(-3.26)
AIC	-189	-203	-205	-207
BIC	-130	-168	-173	-180
Durbin-Watson d	2.20	2.00	2.00	2.02
Observations	83	87	87	87
Adjusted R-squared	0.81	0.80	0.80	0.80

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table SE1. Testing down of consumption in Sweden

	(1)	(2)	(3)
Consumption t -1	-0.22***	-0.18***	-0.17***
	(-3.03)	(-2.95)	(-2.92)
Y t -1	0.19***	0.16***	0.15***
	(3.29)	(3.16)	(3.20)
Stock prices t-1	-0.01*	-0.01*	-0.01*
	(-1.67)	(-1.83)	(-1.77)
House prices t-1	-0.02*	-0.01	-0.01
	(-1.87)	(-1.50)	(-1.30)
Household debt t-1	0.01	0.00	-0.00
	(0.29)	(0.12)	(-0.22)
Δ Y t	0.81***	0.83***	0.87***
	(7.67)	(8.94)	(11.01)
Δ Y t -1	-0.05		
	(-0.50)		
Δ Y t-2	-0.07		
	(-0.74)		
Δ Y t-3	-0.06		
	(-0.67)		
Δ Stock prices t	-0.02	-0.02*	-0.02**
	(-1.57)	(-1.83)	(-2.00)
Δ Stock prices t-1	0.01	0.00	
	(0.61)	(0.30)	
Δ Stock prices t-2	0.00		
	(0.10)		
Δ Stock prices t-3	0.01		
	(0.85)		
Δ House prices t	0.02	0.03	
	(0.46)	(0.83)	
Δ House prices t-1	0.06	0.06	0.05
	(1.49)	(1.56)	(1.46)
Δ House prices t-2	0.05		
	(1.08)		
Δ House prices t-3	0.02		
	(0.37)		
Δ Household debt t	0.02	0.01	
	(0.45)	(0.30)	
Δ Household debt t-1	-0.04	-0.04	
	(-0.84)	(-0.84)	
Δ Household debt t-2	-0.06	-0.04	
	(-1.08)	(-0.91)	
Δ Household debt t-3	0.09*	0.09**	0.06*
	(1.80)	(2.43)	(1.85)
Constant	0.28*	0.20*	0.15
	(1.87)	(1.68)	(1.36)
AIC	-481	-498	-504
Durbin-Watson d	1.94	1.95	1.93
Observations	106	107	107
Adjusted R-squared	0.72	0.73	0.74

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Year dummies for 1919, 1941, 1945 and 1946 not reported

Appendix Table SE2. Swedish consumption with total debt instead of household debt

	(1)	(2)	(3)	(4)	(5)
Consumption t -1	-0.22***	-0.27***	-0.23***	-0.19***	-0.28***
	(-3.65)	(-3.93)	(-2.82)	(-2.73)	(-3.41)
Y t -1	0.16***	0.22***	0.18***	0.15***	0.26***
	(3.40)	(3.95)	(2.86)	(2.93)	(3.55)
Stock prices t-1	-0.02**	-0.01	-0.01*	-0.01	-0.01
	(-2.38)	(-1.05)	(-1.76)	(-1.32)	(-0.52)
Stock prices t-1 * postwar		-0.01			0.03
		(-0.53)			(1.07)
Stock prices t-1 * post-1980		-0.02*			-0.03**
		(-1.86)			(-2.40)
House prices t-1	-0.03*	-0.03*	-0.03	-0.04**	-0.03
	(-1.98)	(-1.73)	(-1.49)	(-2.28)	(-1.26)
House prices t-1 * postwar			-0.02		0.05
			(-0.90)		(1.16)
House prices t-1 * post-1980			-0.01		-0.03
			(-0.44)		(-0.66)
Debt t-1	0.04	0.04	0.04	0.04	0.01
	(1.39)	(1.21)	(1.30)	(1.03)	(0.35)
Debt t-1 * postwar				-0.01	-0.06*
				(-0.89)	(-1.67)
Debt t-1 * post-1980				0.01	0.10*
				(0.46)	(1.71)
Δ Y t	0.90***	0.93***	0.90***	0.90***	0.94***
	(11.73)	(12.00)	(11.73)	(11.73)	(12.17)
Δ Stock prices t	-0.02*	-0.02*	-0.02	-0.02	-0.01
	(-1.86)	(-1.89)	(-1.65)	(-1.39)	(-1.16)
Δ Stock prices t-3	0.01	0.01	0.01	0.01	0.01
	(0.87)	(0.69)	(0.63)	(0.69)	(1.00)
Δ House prices t-1	0.03	0.03	0.02	0.02	0.03
	(0.85)	(0.75)	(0.52)	(0.47)	(0.95)
Δ Debt t-2	0.06	0.08*	0.08*	0.08*	0.07
	(1.58)	(1.73)	(1.67)	(1.86)	(1.56)
Postwar		-0.02	0.09	0.11	0.31
		(-0.94)	(0.77)	(0.76)	(1.45)
Post-1980		-0.02	0.04	-0.14	-0.89**
		(-1.44)	(0.32)	(-0.51)	(-2.15)
Constant	0.19***	0.17**	0.15**	0.14*	0.18**
	(3.25)	(2.36)	(2.04)	(1.89)	(2.50)
AIC	-501	-500	-496	-498	-504
Durbin-Watson d	1.87	1.79	1.88	1.92	1.86
Observations	106	106	106	106	106
Adjusted R-squared	0.75	0.75	0.74	0.75	0.77

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. year dummies for 1919, 1941, 1945 and 1946 not reported.

Appendix Table SE3. Swedish investment: testing down of ECM with 0, 1 2 and 3 lags

	(1)	(2)	(3)	(4)
Investment t-1	-0.20***	-0.19***	-0.20***	-0.20***
	(-3.04)	(-3.54)	(-3.86)	(-3.84)
Y t-1	0.32***	0.31***	0.32***	0.32***
	(3.10)	(3.72)	(4.09)	(4.08)
Interest rate t-1	0.00	0.00	0.00	0.00
	(0.40)	(0.86)	(1.04)	(1.05)
Stock prices t-1	0.02	0.03*	0.04**	0.04**
	(1.08)	(1.92)	(2.34)	(2.34)
House prices t-1	-0.01	-0.01	-0.01	-0.01
	(-0.29)	(-0.30)	(-0.56)	(-0.50)
Corporate debt t-1	-0.05*	-0.06***	-0.06***	-0.06***
	(-1.83)	(-2.73)	(-2.72)	(-2.86)
Δ Y t	1.40***	1.51***	1.58***	1.55***
	(4.97)	(6.02)	(6.84)	(6.90)
Δ Y t-1	0.34	0.25	0.32	0.30
	(1.43)	(1.15)	(1.49)	(1.45)
Δ Y t-2	-0.75***	-0.62***	-0.63***	-0.63***
	(-2.83)	(-2.99)	(-3.11)	(-3.11)
Δ Y t-3	0.22			
	(0.92)			
Δ Interest rate t	0.01*	0.01**	0.01***	0.01***
	(1.97)	(2.50)	(2.94)	(3.01)
Δ Interest rate t-1	0.01*	0.01**	0.01**	0.01**
	(1.84)	(2.15)	(2.12)	(2.18)
Δ Interest rate t-2	0.00			
	(0.35)			
Δ Interest rate t-3	-0.00			
	(-0.70)			
Δ Stock prices t	0.04	0.04	0.04	0.04
	(1.28)	(1.40)	(1.37)	(1.37)
Δ Stock price t-1	0.06	0.04		
	(1.65)	(1.37)		
Δ Stock price t-2	0.03			
	(0.83)			
Δ Stock price t-3	0.01			
	(0.29)			
Δ House prices t	-0.02	-0.05	-0.05	
	(-0.24)	(-0.56)	(-0.59)	
Δ House price t-1	-0.15	-0.14	-0.15	-0.17*
	(-1.44)	(-1.46)	(-1.55)	(-1.98)
Δ House price t-2	-0.03			
	(-0.34)			
Δ House price t-3	-0.05			
	(-0.46)			
Δ Corporate debt t	0.02	0.02	0.03	0.02
	(0.48)	(0.49)	(0.62)	(0.50)
Δ Corporate debt t-1	0.01	0.04		
	(0.22)	(0.80)		
Δ Corporate debt t-2	0.01			
	(0.28)			
Δ Corporate debt t-3	0.01			

	(0.16)			
Constant	-1.03***	-0.92***	-0.96***	-0.94***
	(-2.99)	(-3.20)	(-3.55)	(-3.52)
AIC	-294	-303	-303	-305
Durbin-Watson d	1.95	1.83	1.82	1.80
Observations	106	108	108	108
Adjusted R-squared	0.68	0.68	0.68	0.68

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Year dummies for 1915, 1916, 1919, 1940, 1945 and 1946 not reported.

We start with specification (1) which includes 0-3 lags of all differenced variables. We thereafter successively drop insignificant lags after which we reach the more parsimonious specification (4), which is used as the base specification in the paper (Table 8).

Appendix Table SE4. Swedish investment with only corporate investment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Corporate investment t-1	-0.26***	-0.23***	-0.22***	-0.30***	-0.25***	-0.25***	-0.33***
	(-3.68)	(-3.81)	(-4.00)	(-4.93)	(-4.15)	(-4.25)	(-4.87)
Y t-1	0.51***	0.47***	0.47***	0.63***	0.49***	0.51***	0.69***
	(3.83)	(4.06)	(4.32)	(5.05)	(4.31)	(4.40)	(4.80)
Interest rate t-1	0.00	0.00	0.00	0.01**	0.01	0.01	0.01
	(0.51)	(1.06)	(1.32)	(2.06)	(1.08)	(1.50)	(1.25)
Stock prices t-1	0.01	0.02	0.02	0.04	0.01	0.01	0.05
	(0.30)	(0.80)	(0.91)	(1.06)	(0.46)	(0.59)	(1.33)
Stock prices t-1 * postwar				-0.20**			-0.23**
				(-2.47)			(-2.10)
Stock prices t-1 * post-1980				0.04			0.03
				(0.80)			(0.46)
House prices t-1	0.04	0.03	0.04	0.03	0.08	0.06	0.01
	(1.01)	(0.99)	(1.25)	(0.56)	(1.30)	(1.00)	(0.15)
House prices t-1 * postwar					-0.09		-0.08
					(-1.13)		(-0.63)
House prices t-1 * post-1980					-0.00		-0.11
					(-0.03)		(-0.69)
Corporate debt t-1	-0.09**	-0.10***	-0.11***	-0.17***	-0.14***	-0.14***	-0.18***
	(-2.21)	(-2.74)	(-3.51)	(-4.55)	(-3.67)	(-3.76)	(-4.10)
Corporate debt t-1 * postwar						-0.13	0.11
						(-1.20)	(0.57)
Corporate debt t-1 * post-1980						0.04	0.18
						(0.50)	(1.12)
Δ Y t	1.79***	1.86***	1.87***	1.69***	1.76***	1.77***	1.73***
	(4.15)	(4.93)	(5.18)	(4.60)	(4.60)	(4.62)	(4.63)
Δ Y t-1	1.45***	1.41***	1.38***	1.30***	1.36***	1.36***	1.30***
	(3.94)	(4.43)	(4.43)	(4.19)	(4.23)	(4.27)	(4.13)
Δ Y t-2	-1.20***	-1.09***	-1.06***	-1.24***	-1.13***	-1.12***	-1.23***
	(-2.90)	(-3.49)	(-3.47)	(-4.00)	(-3.53)	(-3.52)	(-3.92)
Δ Y t-3	0.36						
	(0.99)						
Δ Interest rate t	0.02**	0.02**	0.02***	0.02***	0.02***	0.02***	0.02**
	(2.19)	(2.54)	(2.84)	(2.77)	(2.69)	(2.92)	(2.07)
Δ Interest rate t-1	0.00						
	(0.54)						
Δ Interest rate t-2	0.01						
	(0.90)						
Δ Interest rate t-3	-0.00						
	(-0.56)						
Δ Stock prices t	0.08*	0.07	0.08*	0.07*	0.07	0.07	0.08*
	(1.77)	(1.62)	(1.87)	(1.72)	(1.54)	(1.66)	(1.76)
Δ Stock price t-1	0.08	0.06	0.06	0.09*	0.07	0.08	0.09*
	(1.62)	(1.28)	(1.30)	(1.93)	(1.37)	(1.60)	(1.83)
Δ Stock price t-2	0.01						
	(0.29)						
Δ Stock price t-3	0.04						
	(0.72)						
Δ House prices t	-0.16	-0.20	-0.18	-0.14	-0.12	-0.14	-0.14
	(-1.07)	(-1.41)	(-1.33)	(-1.01)	(-0.87)	(-0.96)	(-1.00)
Δ House price t-1	-0.48***	-0.52***	-0.53***	-0.43***	-0.50***	-0.51***	-0.41**

	(-2.89)	(-3.37)	(-3.56)	(-2.70)	(-3.17)	(-3.23)	(-2.46)
Δ House price t-2	-0.14						
	(-0.92)						
Δ House price t-3	-0.11						
	(-0.67)						
Δ Corporate debt t	0.06	0.06					
	(0.74)	(0.91)					
Δ Corporate debt t-1	-0.05	-0.02					
	(-0.65)	(-0.28)					
Δ Corporate debt t-2	0.16**	0.14**	0.15**	0.20***	0.17**	0.18**	0.19***
	(2.08)	(2.08)	(2.34)	(3.03)	(2.50)	(2.59)	(2.77)
Δ Corporate debt t-3	0.12	0.10	0.11*	0.13**	0.12*	0.12*	0.13**
	(1.57)	(1.61)	(1.75)	(2.09)	(1.81)	(1.84)	(2.02)
Postwar				-0.13	0.43	1.04	-0.69
				(-1.60)	(1.20)	(1.23)	(-0.56)
Post-1980				0.02	0.03	-0.35	-1.01
				(0.30)	(0.08)	(-0.47)	(-1.10)
Constant	-2.52***	-2.18***	-2.11***	-2.65***	-2.22***	-2.25***	-2.87***
	(-3.71)	(-3.86)	(-4.06)	(-4.72)	(-4.05)	(-4.13)	(-4.83)
AIC	-202	-214	-216	-220	-211	-212	-215
Durbin-Watson d	1.75	1.78	1.77	1.80	1.77	1.77	1.81
Observations	106	107	107	107	107	107	107
Adjusted R-squared	0.66	0.67	0.68	0.70	0.67	0.67	0.69

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Year dummies for 1915, 1916, 1919, 1940, 1945 and 1946 not reported.

Appendix Table SE5. Swedish investment with total debt instead of only corporate debt

	(1)	(2)	(3)	(4)	(5)
Investment t-1	-0.16***	-0.20***	-0.18***	-0.17**	-0.40***
	(-2.83)	(-2.90)	(-2.72)	(-2.57)	(-5.53)
Y t-1	0.29**	0.33**	0.30**	0.34**	0.93***
	(2.49)	(2.46)	(2.19)	(2.31)	(5.56)
Interest rate t-1	-0.00	-0.00	-0.00	0.00	-0.01***
	(-0.11)	(-0.57)	(-0.69)	(0.24)	(-2.82)
Stock prices t-1	0.02	0.05*	0.03	0.01	0.08***
	(1.09)	(1.68)	(1.45)	(0.63)	(2.92)
Stock prices t-1 * postwar		-0.06			-0.16**
		(-1.02)			(-2.26)
Stock prices t-1 * post-1980		-0.04			-0.09**
		(-1.22)			(-2.27)
House prices t-1	-0.01	-0.02	0.02	0.01	0.11**
	(-0.23)	(-0.48)	(0.38)	(0.27)	(2.05)
House prices t-1 * postwar			-0.01		-0.15
			(-0.17)		(-1.47)
House prices t-1 * post-1980			-0.07		-0.63***
			(-1.34)		(-5.17)
Debt t-1	-0.07	-0.04	-0.05	-0.11	-0.42***
	(-0.90)	(-0.46)	(-0.59)	(-1.11)	(-4.02)
Debt t-1 * postwar				0.03	0.23***
				(0.65)	(2.72)
Debt t-1 * post-1980				0.03	0.99***
				(0.35)	(5.37)
Δ Y t	1.72***	1.70***	1.65***	1.74***	1.88***
	(6.74)	(6.43)	(6.13)	(6.36)	(7.95)
Δ Y t-1	0.28	0.24	0.24	0.29	0.33
	(1.25)	(1.03)	(1.04)	(1.25)	(1.63)
Δ Y t-2	-0.52**	-0.56**	-0.59**	-0.50**	-0.44**
	(-2.40)	(-2.53)	(-2.61)	(-2.15)	(-2.21)
Δ Interest rate t	0.01*	0.01	0.01	0.01*	0.00
	(1.93)	(1.31)	(1.52)	(1.98)	(0.08)
Δ Interest rate t-1	0.01*	0.01**	0.01**	0.01*	0.02***
	(1.91)	(2.00)	(2.08)	(1.79)	(3.71)
Δ Stock price t-1	0.05*	0.05*	0.04	0.06*	0.03
	(1.73)	(1.70)	(1.30)	(1.77)	(1.11)
Δ House prices t	0.02	0.04	0.02	0.03	-0.03
	(0.17)	(0.34)	(0.15)	(0.27)	(-0.26)
Δ House price t-1	-0.17*	-0.13	-0.17	-0.18	0.02
	(-1.66)	(-1.17)	(-1.56)	(-1.62)	(0.20)
Δ Debt t	-0.17	-0.17	-0.14	-0.20	-0.23
	(-1.08)	(-1.06)	(-0.84)	(-1.20)	(-1.63)
Postwar		-0.04	0.06	-0.23	-1.58***
		(-0.71)	(0.24)	(-0.62)	(-3.01)
Post-1980		-0.01	0.40	-0.26	-6.39***
		(-0.30)	(1.31)	(-0.35)	(-4.97)
Constant	-0.81***	-1.06**	-0.98**	-0.86**	-2.25***
	(-2.67)	(-2.56)	(-2.43)	(-2.13)	(-5.24)
AIC	-295	-289	-289	-288	-319
Durbin-Watson d	1.68	1.60	1.67	1.70	2.03

Observations	108	108	108	108	108
Adjusted R-squared	0.65	0.64	0.64	0.64	0.74

t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Year dummies for 1915, 1916, 1919, 1940, 1945 and 1946 not reported.