DIVIDEND POLICY IN CRISIS. CASE OF JAPAN 1991-2008

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Abstract

We argue in the paper that Japan is a specific case for analyzing economic processes and business behavior under crisis. We ask questions related to general dividend policy conducted by companies listed at the Tokyo Stock Exchange (TSE). Formal testing in regression models covers responses to standard variables that are perceived in theory as dividend-sensible. We benchmark our results for crisis (1991-2008) against estimates for the preceding period 1980-1990 and results obtained in literature. We cast the findings against information about structure of investors holding stocks in Japan and argue that clienteles hypothesis may hold. In this particular case of an economy in crisis and an old society, demographic considerations may be playing a significant role due to increasing demand for liquid resources to pay out growing amount of pensions.

Keywords: dividend policy, crisis, Japan, Tokyo Stock Exchange

JEL codes: *E22, E30, G35*

1. Introduction

For several decades the global economy has been developing very dynamically. There have been some local financial crises (Russia, Czech Republic, Mexico, Indonesia, South Korea) with only regional spillover effects. They have been influencing the main capital markets in the negligible and short term way. This has been the reason for making an economic recession something unusual for most of the societies in developed countries. Recession and later prolonged stagnation were present in Japan however already from 1991.

The Japanese society and the private sector got used to it and developed specific institutional, legal and customary solutions adjusted for the situation over the lost decade. Among others, it referred to dividend policy of companies listed at the Tokyo Stock Exchange.

In the theory of economics, the expectations are given a great importance for many years. Expectations are different in distinctive business cycle phases. Under severe economic crisis, originating from the USA many societies will have to adjust their expectations and investing strategies to this new situation. It is hard to expect to maintain the former corporate income dynamics. As a consequence, dividend policy is going to be redesigned. Case of Japan, as a country striving almost 20 years with a prolonged crisis may be an interesting source of inspiration for companies in Europe, suffering currently first, second and third wave effects of the global crisis. This is our motivation for studying empirically dividend policy in Japanese corporations.

The aim of the paper is to formally test relationships between dividend policy captured alternatively by several variables (the average dividend yield, the total amount of dividends paid out and dividends paid in non-financial sector) and variables traditionally perceived in literature as determinants of dividend policy. The coverage of the empirical part is as follows. Time period covered is from 1980 to 2008 with aggregated observations for the whole stock market and for the non-financial companies listed at the TSE. Hypotheses to be verified empirically deal with traditionally perceived relationships between dividend policy and:

a). business cycle – captured by the rate of the real GDP,

b). net sales,

c). size of a company – captured by total assets.

Simple regression models estimated separately for the non-crisis period of the „bubble economy" 1980-1990 and the crisis period 1991-2008 should allow for concluding on any changes in the tested relationships. A separate group of models will be estimated using the whole sample 1980-2008 with an additional dummy variable embodying crisis period from 1991 (KR=1) and "bubble economy" (KR=0).

The rest of the paper is organized as follows. First comes the description of the main causes and the nature of the prolonged economic stagnation in Japan. The recognized reasons

are of institutional, legal and demographic nature and result also from the global imbalances in international trade. Then, the specific features of the Japanese capital market are revealed, covering the structure of investors holding stocks and their preferences regarding dividends. The empirical part, presents results of estimations for groups of models organized by different proxies for dividend policy. They test for any changes in the statistical relationship between the „bubble economy" and the following crisis after 1990. The paper is closed with conclusions about the long-term consequences of specific features of Japanese economy and society that together with the dividend policy in crisis may create a serious threat for the viability of Japan. Growing demand for dividends from pension plans and resulting necessity to devote earnings for cash dividends instead of re-investing in research&development is pointed out as the reason for concern at corporate and government level.

2. Origins and nature of the prolonged economic recession in Japan 1991-2008

Japan is a very special case, both concerning the society and the economy. After the II world war, the pacifist approach and focusing on technology improvement and development allowed for creating a phenomenon in the global scale.

Japan was always a poor country. Topographic and climate conditions did not facilitate efficient agriculture. The only important natural resource is cuprum, while other minerals and metals are not present or their decent deposits depleted long time ago. As a consequence, production of industrial goods is impossible without extensive imports of materials and fuels. Additionally, domestic animal and plant production is satisfying only about 40% of Japanese demand for nutrients. Common dependence on deliveries from abroad and spending a substantial share of income on imported goods make Japan vulnerable to many external shocks in the global food, commodities and fuels markets. One have to remember that industrial production in Japan exceeds domestic demand and is placed in foreign markets. Without exports and imports Japan has no right to exist in its current form and status. The whole situation makes Japan highly vulnerable for any external developments and at the microeconomic level it affects earnings of corporations and a resulting remuneration for shareholders.

The crisis and the long-lasting stagnation, which occurred after 1990 resulted from synergy of both, internal and external factors. One should note however, that the domestic

economic policies leading to asset price bubble was shaped in line with considerations pertaining to incentives flowing from the external situation of Japan.

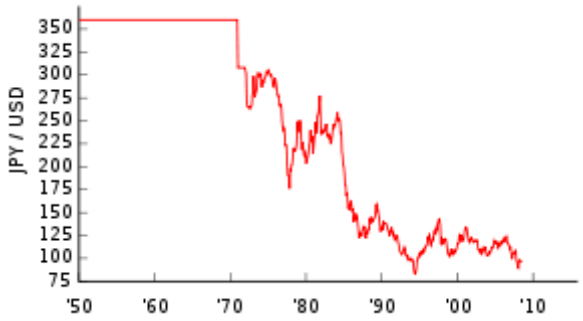
Discussing the major internal problems, one has to mention very rigid legal and institutional framework of the Japanese labor market since 70s. Growing rigidity of the real adjustments of endowments of labor in business cycle phases was overcome only after the bubble economy with solutions avoiding market mechanism for full-time employment. Specific solutions, their origins, nature and consequences are described in detail by Młodkowski and Makoto (2009). In general, for any external observer, there is still a substantial over-employment in Japan in comparison with other industrialized countries. As a consequence, the labor costs represent a major share in total production costs. There is lack of social and political acceptance for nation-wide restructuring of employment due to expected unprecedented surge in unemployment, as a consequence of such a move. However, this is still possible that such a shock would be an impulse for creative entrepreneurs to absorb the labor force surplus in new business projects for the prosperity of the whole country.

Aside from the rigid labor market, Japan was conducting many costly social policies resulting in expansionary fiscal policy and central government deficit. Nowadays, this is one of the most indebted economies in the world. It is enough to mention that the interest on public debt represents about 25% of all public spending (Cabinet Office 2009) at a very low interest rate 0,01%-0,02% (Bank Of Japan 2009). An increase in interest rate to 1% of annual nominal interest rate would lead to tenfold increase in costs of servicing the domestic public debt. Simultaneously, there would be a sudden drop in prices of financial instruments leading, without any doubt, to destabilization of the financial sector.

Theory of economics indicates a positive relationship between public finance balance, current account balance and the nominal exchange rate. Japanese economy is not an exemption and confirms this relationship. One of the most severe problems for many past decades was systematic appreciation of yen. There is even a special term for this period – ENDAKA (translated as „high yen" – figure 1). As a consequence, competitiveness of Japanese exports decreases systematically and at the microeconomic level results in decreasing profitability of any business activity focused on target markets abroad. For Japan this situation represents a social and economic problem. Decreasing import prices (due to appreciating yen) do not improve the financial standing because their share in total production costs in comparison with other elements is minor, especially when we mention the common over-employment.

Exchange rate policy and monetary policy in Japan were conducted in 1980s in a way replicated later by the FED at the beginning of XXI century under the lead of Alan Greenspan and Ben Bernanke. In the USA it brought the global financial crisis in 2008. In Japan the domestic consequence was a long-lasting crisis and stagnation for over more than a decade. Due to the chronic trade deficit of the USA, including trade with Japan, there was a special agreement signed in Plaza Hotel in New York in 1985, known as "The Plaza Accord". The aim of this agreement was to induce devaluation of the US dollar against the Deutsche Mark and the Japanese yen. To achieve this, a joint currency intervention by central banks of the USA, France, Japan, West Germany and England. Over the following three years, the interventions resulted in 51% appreciation of the Japanese yen by the end of 1988.

Figure 1 Nominal exchange rate JPY/USD, 1950-2009



Source: Authors, based on The International Financial Statistics, International Monetary Fund, Washington D.C. January 2009

It was a very difficult time for the Japanese companies, because exported products were loosing their competitive position. Profitability of enterprises was decreasing. Monetary policy aimed at appreciation of the yen meant the necessity to maintain low interest rates. This in turn, led to credit expansion and a growing demand for domestic assets. Prices of real estate in Japan were skyrocketing from 1985 to 1991. When the asset price bubble burst in 1991, there was on average a 40% drop in these prices (Ugai 2007).

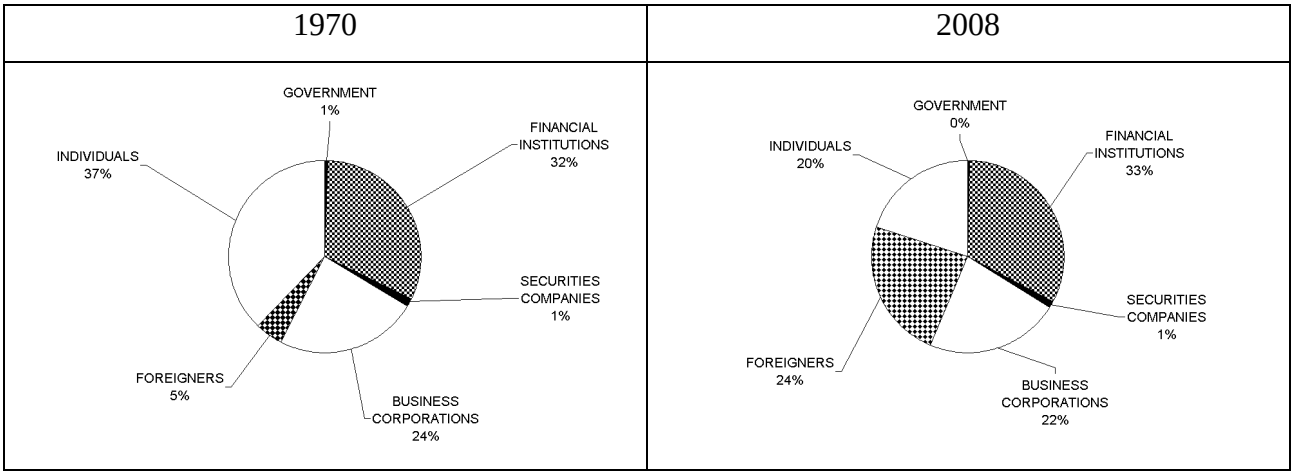
Social and economic situation during 1991-2008 period, for which we analyze dividend policy in Japanese companies was a consequence of accumulation of crisis-generating factors. Earnings of enterprises were reflecting problems resulting from the rigid framework of labor market and from the decreasing competitiveness in foreign markets due to appreciation of yen. Simultaneously, demand for cash dividends was growing due to institutional investors' preferences constrained by the obligation to pay out pensions to more and more pensioners.

3. Potential factors driving dividend policy at the Tokyo Stock Exchange in theory and practice.

Tokyo Stock Exchange was founded on 15th of May 1878. At the beginning, there were traded only bonds issued by samurais. It was already in 1920s, when Japan experienced a sudden economic growth and development and the stock market welcomed issues of shares, corporate bonds and silver currency. Currently, there are shares of 2373 domestic and 16 foreign companies listed at the TSE. Japanese capital market is the second biggest stock market in the world, according to total capitalization, for many years.

Preferences of investors providing capital to companies via a stock market are of major importance for dividend policy. There are distinctive expectations of different investors' groups regarding the form and time preferences for remuneration for the provided capital. In case of Japan, the largest share among shareholders in 2008 represent the financial institutions (banks and investment funds), at 32,4% of all assets traded (Figure 2). The second group is composed of foreign investors with 23,6% share. It is important to note that this category was basically not present in some earlier periods due to specific protectionist measures present in Japan until 1970s. The Japanese corporations themselves maintain substantial portfolios of financial assets and as a result, this group of investors represents the 22,4% share with individual investors holding the rest – 20,1%. A negligible share below 1% is of the government.

Figure 2 Structure of investors holding shares at the Tokyo Stock Exchange in 1970 and in 2008

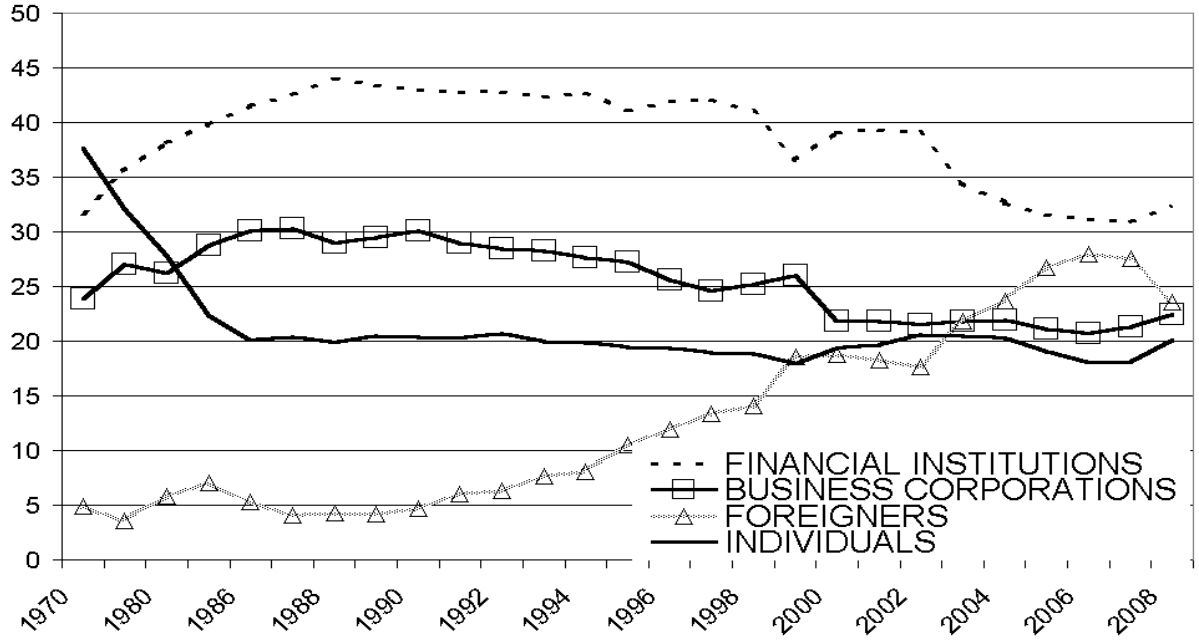


Source: Authors, based on 2008 Shareownership Survey, TSE

The structure of investors holding stocks at the TSE has undergone a substantial transformation over the last 40 years. Recalling back the 1970s, one can observe gradual opening of the Japanese capital market to foreign investors. However, until the 1990s, their

share was low and remained below 5%. In particular, in 1978 the share was only 2.7%. Then, in 1995 it moved to 10% and in 2003 doubled, rising to 21%. In 2006 the share of foreign investors holding stocks at the TSE reached its peak at 2008 and fall to 24% in 2008. Since 2004, foreign investors in Japan are the second biggest group of investors, just after the domestic financial institutions. Over the last 40 years one can observe a significant decrease of share of individual investors holding stocks traded at the TSE from 37.7% to below 20%. For this reallocation however, the most important period were 1970s. and 1980s (Figure 3). The share of financial institutions in share ownership at the TSE was fluctuating over the studied period.

Figure 3 Developments of shares (in %) of the main investors at the Tokyo Stock Exchange 1970-2008



Source: Authors, based on 2008 Shareownership Survey, TSE

In 1970s. and 1980s. the financial institutions were absorbing shares sold by individual investors. In 1970, financial institutions hold about 31% and reached the peak in 1988 holding more than 41% of all stocks traded. The most recent period witnessed a return to the initial level of share, at around 32%. This group of investors maintain the leader position for the whole period. Shares of securities companies and local and central government are for the whole period close to 1% and for the purpose of this study these two groups are negligible, having no tangible influence on dividend policy. Relatively stable share of business corporations at around 20% reflects the specific nature of the Japanese economy, where large conglomerates dominate the main industries.

Another dimension of a substantial influence on studying the dividend policy at Japanese companies relates to demographic structure of the Japanese society. According to the World Bank database, The Global Development Indicators, life expectancy at birth in Japan is among the longest and the fertility rate is among the lowest in the world (WB 2009). As a consequence, Japanese society may be perceived as a very old society, with an increasing demand for cash transferred to retired citizens. In addition, social security system is extensive and together with the pension system depends on public finance support. Corporate pension funds are created by business companies.

They invest pension fund contributions in financial instruments listed at the TSE. As big and long-term shareholders, they execute a substantial influence on the dividend policy and corporate strategies in the area of earnings distribution. Most of them expect and demand a stable cash inflow from their shareholdings in a form of dividends. As a consequence, Japanese companies must succumb and adjust to these preferences. Most of the individual investors in Japan also expect a stable income from their portfolios. This is especially true for older persons, which support their level of consumption with the return on their additional savings. Risk aversion increases with age of investors and in an old society in Japan takes its pure form. Therefore, this group of investors is not interested in speculation but longs for a decent cash dividend each period. All these factors make dividend policy in Japan shaped according to needs and preferences of these main groups of investors.

Foreign investors at foreign stock markets are most often financial institutions, for which shareholdings are recognized in the official statistics as “portfolio investments” due to its short-term nature and lack of influence on the management of the underlying enterprises. Their preferences for dividends are in most cases the same. Japan is for many years perceived as a safe marina for the speculative capital. Quick and strong appreciation of yen in the last quarter of 2008 confirms this claim and shows that despite of many domestic problems that surfaced in that period, they are of no concern for speculators. Short-term involvement induces omitting dividend considerations. This allows to assume that many of the foreign investors are dividend policy-neutral.

Decisions in regard to dividend policy are among the most important under financial strategies of companies. These decisions set the distribution pattern for the earned income. Earnings may be retained for reinvesting in expansion or distributes among capital providers. For a limited period of time, companies may spend the total net income on dividends, however this strategy results in no internally-generated resources for development. Therefore,

the issue of an optimal distribution of net income is still an open problem. Companies' behavior in this regard is determined by numerous micro- and macroeconomic factors that develop over time.

Most of the research studies of the dividend policy was conducted in and on Anglo-Saxon countries, mainly in the USA. The reason is in a relatively long history of American capital markets and their high level of development. It was already almost 50 years ago, when Modigliani and Miller (1961) argued that dividend policy may be set on the basis of investors' preferences. According to their hypothesis, companies paying lower (higher) dividends do not attract (attract) investors that do not prefer (prefer) profits from dividends. This is a hint for the best matching between investors preferences and the dividend policy. For example, exempt from the dividend-tax institutional investors with a low marginal rate of taxation are preferring shares earning them a high dividend yield. The Authors suggest also that 'young accumulators' prefer shares with a low dividend payout ratio and elderly people and pensioners incline towards shares that offer higher and stable income in the form of a dividend (Miller and Modigliani 1961, p. 431).

Graham and Kumar (2005) study investment behavior of more than 60 000 households in the USA to recognize investment behavior and preferences. According to their results, there is a strong clientele effect. Conclusions are based on observations of clients of one of the biggest brokerage houses in the USA for 1991-196 period. Using the sample of 62 387 investment accounts they conclude that individual investors in the USA prefer shares of companies that do not pay dividends. A separated sub-sample of 31 620 accounts of clients that were classified as "older persons and of lower income" shows a much higher share of dividend-earning stocks in their portfolios. This is the basis for concluding that dividends are preferred with age, which is consistent with the life cycle and consumption preferences. In addition, preferences for income from dividends decreases with increase in total income, which is consistent in turn with the fact that investors who are subject to lower tax rate hold shares offering higher dividends. These two observations are consistent with dividend clientele and tax clientele theories. In the USA, institutional investors prefer stocks of lower dividend yield. Graham and Kumar (2005) argue that older investors and those of lower income tend to buy stocks of companies that have just announced dividend payments. This pattern is consistent with behavioral hypothesis (Lee 1992, Barber and Odean 2001). According to this hypothesis, investors buy those shares that attract their attention. Authors as

the first claim that "the strength of the attention reaction varies predictably with the degree to which the attention of an investor is drawn to a particular event".

The fact that older investors and those of low income hold mainly shares earning high dividends introduces an interesting puzzle in the recent debates on dividend policy. Results of empirical studies suggest that a tax policy aimed at reducing taxation of dividends and by this way encouraging companies to pay dividends, is beneficial for older investors and those of lower income. This seems to be an interesting subject for further research on real effects of tax policy.

Older investors buy shares, which have already a dividend history. Confirmation of the clientele effect in the mentioned research by Graham and Kumar (2005) has its implications for corporate strategies. Managers, that are able to identify the existence of a particular group of shareholders will be unwilling to introduce any changes in the dividend-payout policy since it may discourage investors and induce rearrangements in their portfolios resulting in share prices decline. This observation is consistent with a recent study by Brav, Graham,Harley, and Michaely (2005).

In another recent research by Dong et al. (2005), based on a survey conducted in 2002 in Netherlands, preferences of investors and not opinions of managers were studied. They used Internet survey included in the CentERdata portal and covered 2 723 of its members. Almost 61% of them showed a strong preference for cash dividends. This result does not confirm the Modigliani and Miller (1961) theory that dividends are irrelevant. Dutch respondents prefer cash dividends over capital gains, mainly because lower transaction costs associated with receiving a dividend in comparison with stock trading. The results are not in line with the Gordon (1961, 1962) theory of uncertainty and are not consistent with the Jensen (1986) agency theory. However, there is a strong support for the signaling theory (Bhattacharya 1979, Miller and Rock 1984) and there are some doubts if the results confirm or contradict behavioral theory by Shefrin and Statman (1984). The latter one is confirmed for stock-dividends, but not for cash dividends. Dong et al. (2005) argue that these results cash a doubt if removing tax on dividends would be a reasonable way to stimulate an economy.

A continuation of Dong et al. (2005) studies was a research conducted for the capital market in Greece in 2007 by Maditinos., Šević, Theriou and Tsinani (2007). The initial assumption was that investors in Greece strongly prefer cash dividends. Authors intended to recognize the motifs driving individual investors in shaping their preferences regarding dividend policy. Several most important theories were tested. Authors perceive results as a

strong support for a claim that investors in Greece demand cash dividends. Responses in a survey designed on the basis of Dong et al. (2005) and conducted among investors in Greece support signaling theory most, while behavioral theory finds a weak support in empirics.

In Japan interest in dividend policy is approximately as long as in the USA. However, due to a different investors' structure resulting from demographic factors, legal framework and tax policy there are potentially many factors for shaping earnings distribution in a different way that in the rest of the world. Ho (2003) offers an international comparative analysis of the dividend policy in Japan and in Australia. His analysis used a panel data, covering Australian companies included in ASX 200 Index and Japanese companies covered by Nikkei 225 Index. For the whole period covered by his study 1992-2001, number of companies studied amounted at 2 235. Ho (2003) recognized that as a consequence of tax preferences for dividends over capital gains in Australia, there is a much higher dividend payout ratio than in Japan. This suggests the importance of external environment factors on dividend policy. There is no doubt that dividend policies in Japan and in Australia are under a different set of financial factors. Estimated models with fixed effects suggest that in Australia the size of a company and liquidity matter, while in Japan only risk executes a negative influence on dividends. These results support agency theory, signaling theory and transaction cost in choosing form of return from investment. An industry effect is significant in both countries that indicates the importance of the branch, in which company operates. The gist of Ho (2003) study is showing the importance of the external environment for dividend policy. However, even more important are issues covering the scope of influence of those external factors on dividend policy and any potential interactions among these factors. For example, the tax effect that dominates in Australia allows for a conclusion that transaction costs are the main driving force for decisions of investors. It may be explained by relatively smaller Australian companies in comparison with the Japanese ones.

La Porta et al. (2000) studied the influence of legal framework on dividends in several countries. There is a need however to separate importance and scope of other external factors (the business environment) on dividend policy and therefore his observations are of minor value. Aivazian et al. (2001), when studying dividend policy in emerging markets recognized that governmental and institutional factors are of major importance and there is a need for a separate study to identify it. Since the Japan is not an emerging economy, we may expect a negligible role of the government and other institutions in defining dividend policy. One have to remember that in emerging markets the government is still a significant shareholder and

developing institutional framework introduced systemic changes that are captured in regressions as institutions' dependence of dividend policy. We should not observe it in Japan due to its maturity in institutional solutions and negligible shareholdings by the government.

In Japan we find a corporate financing system based on banking sector (Gerson and Meek 2001). The feature of this solution is the existence of several large commercial banks, which provide capital to most of businesses. Ownership in Japan is rather concentrated and there are long-term cooperation relationships between banks and non-financial sector companies. Information needs of capital providers are met in a relatively simple way through the direct cooperation with a bank and on-site meetings. Direct access to internal information is an effective and practical mean of monitoring of the financial standing. Since the banks are the primary source of capital, financial accounting is designed to protect the creditor.

According to agency theory and signaling theory of dividends (Watts 1973, Jensen and Meckling 1976) these factors may be responsible for a lower dividend payout ratio in Japan in comparison with other countries. A complete scenario of shaping a dividend policy requires to capture many internal relationships with other key decisions resulting from a corporate strategy. Therefore, Lease, John, Kalay, Loewenstein and Sang (2000) claim that any consulting services in the area of a dividend policy must be case-sensitive and consider specific micro-level factors. Managers must therefore first study the scope of information asymmetry and agency costs, taxes and transaction costs and influence of current creditors to define a well suited dividend policy.

Studies covering the Japanese capital market (Suwabe 2006) suggest that signaling theory may be the most appropriate to explain behavior of companies listed at the TSE. Most of the enterprises, when increase the dividend, signal its ability to maintain the new payout ratio in the following years. This is a signal for any potential investors that the company is offering a stable income for its shareholders. This kind of approach dominates the Japanese companies.

4. Dividend policy in crisis 1991-2008.

To verify research hypotheses we create several groups of simple regression models. They allow us to test relationships found in the literature between dividend policy and business cycle and economic and financial situation of an enterprise. In particular, these exogenous variables are:

a). net sales,

b). total assets – as a proxy for size of enterprises,

c). rate of growth of the real GDP.

The general design for all models estimated separately for 1980-1990 and 1991-2008 in all groups is given by the equation 1:

$$DIVPOL_t = X_t + \varepsilon_t \quad (1)$$

where:

$DIVPOL_t$ – is the variable assumed to be a proxy of the dividend policy in period t,

X_t – is the exogenous variable in period t,

ε_t – is the standard error term $N \approx (0,\sigma)$.

Time series used for estimations come from two credible sources. The data on dividend policy and financial situation of companies is from the Tokyo Stock Exchange database, available on-line in spreadsheet form. Some additional information comes from the annual Factbooks issued by the TSE. Time series for the real GDP growth rate are provided by the Cabinet Office via its website, also in a spreadsheet format. Time-span is from 1980 to 2008 and all time series are annual observations for actual and average values of the variables included in models.

The aim of the empirical exercise is to estimate parameters for simple regression models on 1991-2008 sample period and use the estimates coming from the same models estimated for 1980-1990 period. Any recognized similarities and differences will be interpreted as resulting from a change in the economic conditions after the bubble economy. For a separate group of simple regression models estimated for the whole available sample period, a dummy variable "KR" is introduced in order to embody crisis period after 1990. Any recognized statistical significance of the "KR" parameter estimates will be an argument supporting our assumption that the change that occurred in 1991 and conditions prevailing over the 17 years after that were significant for the dividend policy in Japan.

Our estimations were conducted for all available time series, which included separate observations for each aggregated variable for the following categories of companies: (1) non-

financial sector, (2) manufacturing sector, (3) non-manufacturing sector. Since the first category in nominal terms was just a simple sum of (2) and (3) it was reasonable to restrict the presentation of obtained results to only non-financial sector. Results obtained for the non-manufacturing sector, that should be perceived as the service sector, do not diverge from the results for the (1). The real GDP growth rate was not decomposed into these three categories and entered each model in the same general form.

Initially, we have chosen the following variables for testing relationships between them and the dividend policy (Table 1). However, heteroscedasticity of the initial time series and problems with removing trends by standard methods resulted in rejecting some of endogenous and exogenous variables.

Table 1 The Augmented Dickey-Fuller test (unit root test) for the initial set of variables, after de-trending by taking logarithms and calculating first differences. Critical values * =>5%=-1.984; **=>1%=-2.908

Variable full name	**Variable**	**t-adf**
Return on Investment	ROI	-1.9519
Real GDP growth rate	**rGDP**	**-2.7304***
Dividend Payout Ratio – non-financial sector	DLDPRnf	0.55513
Dividend Payout Ratio – manufacturing sector	DLDPRma	-0.13488
Net Sales – non-financial sector	**DLNSnf**	**-4.0446****
Net Sales – manufacturing sector	**DLNSma**	**-2.4329***
Operating Income – non-financial sector	DLOInf	-1.9693
Operating Income – manufacturing sector	DLOIma	-1.7536
EBIT – non-financial sector	DLEBITnf	-1.5829
EBIT – manufacturing sector	DLEBITma	-1.4773
Dividends Paid – non-financial sector	**DLDIVPnf**	**-2.7994***
Dividends Paid – manufacturing sector	**DLDIVPma**	**-2.2516***
Total Assets – non-financial sector	**DLTAnf**	**-6.1500****
Total Assets – manufacturing sector	**DLTAma**	**-3.9396****
Average Dividend Yield	**DLADY**	**-2.7175***
Total Amount of Dividends	**DLTAD**	**-3.2568****

Source: Authors

Homoscedastic time series of exogenous variables available for regression models are the following:

- rGDP – real GDP rate of growth,
- DLNS (nf, ma) – net sales (nf-non-financial sector, ma-manufacturing sector),
- DLTA (nf, ma) – total assets.

Homoscedastic time series of variables serving as proxies of the dividend policy available for modeling are:

- DLADY – average dividend yield,
- DLTAD – total amount of dividends,
- DLDIVP (nf, ma) – dividends paid in both sectors.

Table 2 presents results of estimations for the group of models in which the endogenous variable is the average dividend yield at the Tokyo Stock Exchange. Exogenous variables are: the real GDP growth rate, net sales, total assets and the „crisis" dummy variable. Results for 1980-1990, 1991-2008 and 1980-2008 sampling periods should allow for easy comparisons and concluding.

Table 2 Model of the dividend policy for the average dividend yield, 1981-2008, OLS

Sampling period	**Variable**	**Parameter**	**t-Statis.**	**Param. „KR"**	**t-Statis.**	**R^2**	**DW**
1981-1990	GDP	**-0.025745**	**-2.068**	N/a	N/a	0.348	1.34
1991-2008	GDP	0.0040874	0.169	N/a	N/a	0.001	1.85
1981-2008	GDP	**-0.025630**	**-2.147**	**0.085086**	**2.102**	0.211	1.77
1981-1990	NS	0.030998	0.057	N/a	N/a	0.000	0.607
1991-2008	NS	**1.8299**	**2.444**	N/a	N/a	0.271	1.79
1981-2008	NS	0.51709	1.182	0.052911	1.292	0.116	1.41
1981-1990	TA	– 0.40086	-0.805	N/a	N/a	0.067	0.889
1991-2008	TA	**2.1027**	**2.656**	N/a	N/a	0.306	2.33
1981-2008	TA	0.077	0.167	0.052	1.239	0.066	1.52

Source: Authors

For this first group of models it becomes obvious that there is an incorrect specification because R^2 statistic is only twice above 30% and in rest of the models it is negligibly different from ZERO. As a consequence, we have to move to another proxy for dividend policy. The negative response of dividend yield to the real GDP is most probably a

result of anti-cyclical behavior of dividend yield due to pro-cyclicality of the denominator in the formula for DY. This interpretation is confirmed by the model estimated for the period 1980-2008 with the dummy variable. When dividend yield is used as a proxy for dividend policy, it reacts in the opposite way to "crisis" conditions due to stronger decline of share prices than the decline in dividends paid and the resulting increase of dividend yield during recession.

This group of regression models offers results consistent with the finance theory on dividends. It turns out that the total amount of dividends paid out is a pro-cyclical variable. Consistent and statistically significant results characterize almost all other configurations of variables and sampling periods. The only exception is the relationship between the size of the company during crisis.

Table 3 Model of the dividend policy for the total amount of dividends paid out (TAD), 1981-2008, OLS

Sampling period	Variable	Parameter	t-Statis.c	Param. „KR"	t-Statis.	R^2	DW
1981-1990	GDP	**0.022440**	**4.18**	N/a	N/a	0.66	1.49
1991-2000	GDP	**0.01153**	**2.086**	N/a	N/a	0.325	0.934
1981-2000	GDP	**0.021**	**5.684**	-0.0243	-1.525	0.642	1.42
1981-1990	NS	**0.635**	**2.91**	N/a	N/a	0.484	1.4
1991-2000	NS	**0.456**	**2.484**	N/a	N/a	0.406	1.3
1981-2000	NS	**0.604**	**3.998**	-0.002	-0.126	0.47	1.33
1981-1990	TA	**0.772**	**3.676**	N/a	N/a	0.60	1.4
1991-2000	TA	0.242	1.065	N/a	N/a	0.111	1.25
1981-2000	TA	**0.737**	**4.715**	-0.027	-1.499	0.552	1.28

Source: Authors

The scope of the relationship diminishes and the estimate is no longer statistically significant. For this group of regression models, the "crisis" dummy variable is not statistically significant. This result may suggest that signaling theory may be responsible for a strategy focused on maintaining a stable level of dividends, even during economic contractions.

The third group of regression models, with dividends paid in non-financial sector, (manufacturing + service sectors), brings a similar results to the previously presented group. Dividend policy is characterized by a weak pro-cyclicality. In addition, positive estimates for the "crisis" dummy variable indicate that dividends were increased after 1990.

Table 4 Model of the dividend policy for dividends paid, 1981-2008, OLS

Sampling period	Variable	Parameter	t-Statis.	Param. „KR”	t-Statis.	R^2	DW
1981-1990	GDP	**0.026**	**4.805**	N/a	N/a	0.719	0.73
1991-2008	GDP	**0.039**	**3.036**	N/a	N/a	0.35	1.15
1981-2008	GDP	**0.026**	**4.162**	0.038	1.838	0.526	1.01
1981-1990	NS	**0.967**	**7.968**	N/a	N/a	0.875	1.17
1991-2008	NS	**1.661**	**4.118**	N/a	N/a	0.499	0.266
1981-2008	NS	**1.108**	**7.726**	**0.060**	**4.28**	0.76	0.761
1981-1990	TA	**1.053**	**7.75**	N/a	N/a	0.86	1.57
1991-2008	TA	**1.459**	**2.746**	N/a	N/a	0.307	0.492
1981-2008	TA	**1.0303**	**4.775**	**0.043**	**2.273**	0.579	0.735

Source: Authors

For each variable we can observe increase in estimated parameter for the 1991-2008 period. We would like to interpret this change as a sign of a stronger and more direct relationship between strategy of earnings distribution and financial standing of a company during crisis.

5. Conclusions

First, the negative estimates of parameters for the real GDP rate, when dividend yield is used as a proxy for the dividend policy are a natural consequence of the formula for the dividend yield. This variable is anti-cyclical due to more than proportional denominator contraction during crisis and recovery in economic booms.

Second, the „crisis” dummy variable confirms in many models a different behavior of companies in regard to dividends. This issue is to be further analyzed and empirically tested. Generally, the aim of introducing this variable was to test if there were any changes prior to 1991 and after bubble economy.

Third, changes in the size of the enterprise, measured by the total value of assets, became significant for the dividend policy. Domination of large industrial conglomerates at the Tokyo Stock Exchange may be a result of organizational solutions allowing for maintaining stable level of dividends, no matter the business cycle phase. The obtained results should be perceived as valid and describing the nature of the market in the proper way.

Fourth, estimates for the group of models of dividend policy captured by the total amount of dividends paid out are statistically significant and the models perform quite well in terms of the level of explained variability (R^2) of the dependent variable.

Fifth, the amount of dividends paid during 1991-2008 period was by 50% weaker pro-cyclical than in the preceding sampling period. There was a similar, weaker response to net sales during the crises than during the bubble economy, however, it remained positive and statistically significant. After 1990, the size of the company did not play any statistically significant role for the dividends paid out.

Sixth, estimations for the non-financial sector with dividends paid, as an endogenous variable, brought results in line with expectations formulated on the basis of the finance theory about cyclical behavior of dividend policy, dependence on net sales and influence of the size of an enterprise. In addition, the positive estimates for the "crisis" dummy variable allow to offer an interesting interpretation. We would like to explain this behavior from the point of view of the prolonged economic stagnation.

The clientele effect seems very strong in Japan. A driving factor for stable cash dividend policy, no matter the business cycle phase, is an old society that requires substantial support from the pension system. Pension funds as substantial stockholders, in turn, prefer a stable income from the capital invested in shares listed at the Tokyo Stock Exchange. Realizing capital gains is not an option in their case. In addition, they are experiencing a predictable time structure of their pension-payment liabilities and need to match their income structure accordingly. The observed anti-cyclical behavior of the average dividend yield is confirming that Japanese companies do not decrease dividends during recession or any changes in this dimension are less than proportional to the drop in share prices. As a result, we can observe an increase in the average dividend yield in Japan during economic recession and decrease in dividend yield during booms. This behavior was erroneously interpreted in some of the studies mentioned in the brief literature review (Ho 2003).

Companies in Japan operate under unfavorable conditions since 1991. They are forced to maintain a stable level of cash dividend, even when situation suggests retaining earnings for reinvestment and for improving efficiency of internal processes to regain the competitive position and move from a recession. We claim that the structure of shareholders in Japan and their preferences regarding cash dividends are one of the reasons for the long-lasting stagnation and the "lost decade" or we should say: "almost two lost decades". Inability of

Japanese companies to regain the grip and take the lead in the global markets is due to investors constrained with pension-payments.

Pensioners would probably have no other way to finance their consumption, without cash inflow from pension funds. Therefore any solution for the presented problem shall require to consider this fact. Since this prolonged stagnation lasts from 1991 and is emphasized by the recent global financial crisis, we believe that the accumulated losses due to rigidity in dividend policy adjustments may be substantial in terms of productivity, competitive position in export markets and in terms of lost growth and development opportunities. We are not ready to offer a solution to this problem, and invite all interested parties to a discussion on available choices, if any.

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