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The Efficacy of Interest Subsidies as an Investment Incentive Instrument

Emir Çelebi[a]

[a]Ministry of Industry, Department of Investment Incentives and Foreign Direct Investments, Ankara, Türkiye, ORCID: 0000-0003-4012-6911

Abstract

The efficacy of investment incentives is a long-debated topic in the literature and studies mostly focused on quasi-tax incentives. Since interest subsidies have always been a crucial part of investment policy, this study dwelled on the efficacy of interest subsidies as an investment incentive with an extended literature review method. Firstly, interest rate and cash-flow sensitivity literature are explored. Then, the literature on the efficacy of both credit rates and interest subsidies has been discussed in a coherent way to shed light on investment motivation. The possible projection of literature findings on the course of investment and credit in Turkey was discussed by resorting to comparison in the research. Findings show that financial market failures stem from information asymmetry, companies' financing conditions, economic cycles affect the efficacy of interest subsidies. Second, since credit accession (especially for Turkish companies) is a major impediment, the impact capacity of credit guarantee mechanisms seems to be much higher than interest subsidies. Third, interest subsidies might only become effective when the subsidy rate is generous in financial fluctuations. Fourth, monetary and interest subsidy authorities should coordinate on financial aid policies.

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1. Introduction

Subsidies and incentives aim to motivate investors through grants, direct payments, tax reductions and exemptions. The WTO definition is more comprehensive: "A subsidy is a financial contribution by a government, that confers a benefit on its recipients" (Steenblik, 2007). Policymakers usually incentivize certain regions and productive sectors to stipulate investments to ease development. In that sense, the efficiency of incentive tools has always been a hot topic focusing on whether these transfers are meaningful or not.

Even though impact analyses are prevalent in international and domestic literature, credit and interest subsidies did not seem to grab much attention considering the level and intensity of credit subsidies under investment incentives. Credit subsidies consist of three main elements: credit guarantees to solve collateral and credibility problems, interest subsidies to reduce the company's financial cost, and direct subsidized credits via export credit agencies or development banks (Antunes et.al., 2015).

2. Methodology

The study embarks on an extended literature review method. First, the literature focusing on the interest rate and cash-flow sensitivity of investments is explored. Because the rich literature and views embedded in this domain, actually crack the door for potential effects of the interest subsidies. Then, the literature on the efficacy of both credit rates and interest subsidies has been discussed coherently to shed light on investment motivation. The probable inferences from literature findings on the course of investment and credits in Turkey were discussed by resorting to trend comparisons and up-to-date data in the research. The credit circumstances that actually affect Turkish companies' investment decisions are

CONTACT Emir Çelebi emirchelebi@gmail.com

also inevitably investigated throughout the research to bring policy recommendations alternative to interest subsidies.

3. Brief Interest Subsidy History Under Investment Incentives in Turkey

The roots of investment incentive legislation date back to the Ottoman Empire in Turkey and Industry Incentive Law in 1913 was the first sprouts of it. Initial liberalization efforts led the FDI support policies in the 1950s and the Turkish Development Bank was also established to provide 'middle and long-term credits' to the manufacturing sector (Altay and Karabulut, 2017). The paradigm of the economic administration was the import substitution based on central planning before transforming into an export-based liberal approach in the 1980s. The 80s policies were a good example of how policymakers would like to use credit policies. On July 1, 1980, the government removed all controls on commercial bank interest rates and allowed them to float under market mechanism (Yalta, 2006), and rapid liberalization led to a steep increase in the real lending rates during tight monetary policy due to hasty fund gathering that banks were not able to attract in the planning period. Real interest rates were mounted to around %15 (Kandemir & Kandemir, 2019) which seemed to compel policymakers to resort to interest subsidies. However, credit constraints persisted even after the liberalization of financial markets (Günçavdı et.al., 1998).

1979-1983 Development Plan introduced the term "priority regions for development" and the government desired to relocate productive investments to priority regions, %10 higher than the rest of the cities (DPT, 1979: 294). In 1981, priority regions were also divided into two sub-groups according to the severity of underdevelopment shortages (DPT, 2000: 52). In 1984, custom duty exemptions, investment tax credits, income and corporate tax discounts, corporate tax delays and medium-term investment 'credit interest subsidies' are applied with regards to regional priorities, minimum capital and sectoral requirements. This six-legged incentive structure has continued over the years with several tunings.

Efforts on diversifying regional incentive structure continued in the 90s and the term "industry belt" was introduced to classify the underdeveloped cities to address (Official Gazette, 1995). This concept was also abolished later on, but the regional perspective was maintained (Karaca, 2004).

At the end of the 90s, the incentive system was similar to previous versions, including 'loans' from the special incentive fund, customs duty exemptions, investment tax credits and VAT exemptions (Official Gazette, 1999). In the "8th Development Plan Regional Development Expert Commission Report", high public debt, constant legislation amendments, red tape and weak organizational coordination were mentioned as hampering factors in the incentive system (DPT, 2000: 33).

At the beginning of the 2000s, the incentive structure remained the same till 2003 (Official Gazette, 2001) when the differentiated investment tax credit rate was fixed at 40% (Official Gazette, 2003), the priority regions were revised according to the socioeconomic development classification prepared by the State Planning Organization in 2004 (Official Gazette, 2004).

The year 2006 was a turning point for the incentive legislation. 40% fixed investment tax credit is repealed considering the general corporate tax reduction (Official Gazette, 2006). Hence, one of the best-known incentive instruments was ruled out. The years between 2006 and 2009 were one of a kind in incentive tools compared to other historical periods with their simplistic form. In 2006, there were only VAT and customs duty exemptions and 'credit interest subsidies' especially for SMEs. Additional energy support was solely applied to the tourism investments (Official Gazette, 2006b). Subsidized credits/interest subsidies seem to be survived even under the humblest incentive scheme between 2006-2009.

3.1 The Role of the Interest Subsidies Under Current Incentive System

The investment incentive system has been in effect since 2012 with several amendments. The general framework of the current incentive scheme will be examined in this section mostly to clarify the role of interest subsidies.

The incentive system has four main sub-schemes and all of which have similar support measures, yet the support densities depend on the sector, importance assigned by the decree. Available tools can be seen in Table.1 in each sub-scheme.

Table 1. Investment Tools

Support Measures	General Scheme	Regional Scheme	Priority Scheme	Strategic Scheme
Vat Exemption	✓	✓	✓	✓
Customs Duty Exemption	✓	✓	✓	✓
Tax Deduction		✓	✓	✓
Social Security Premium Support (Employer)		✓	✓	✓
Income Tax Withholding Support*	✓	✓	✓	✓
Social Security Premium Support (Employee)*		✓	✓	✓
Interest Subsidy**		✓	✓	✓
Land Allocation		✓	✓	✓

VAT Refund***				✓

* For investments in the 6th region.

** Only for investments in regions 3, 4, 5 or 6.

*** For Strategic Investments' construction costs only for a minimum fixed investment amount of TL 500 million

Source: Ministry of Industry and Technology – DG of Incentive Implementation and FDI

In the regional scheme, six different regions are classified according to the socioeconomic development level determined by the Strategy and Budget Department. Each investor can receive whichever instrument is available according to the regional, sectoral and minimum capital requirements (Annex-1). The support density increases gradually for the investments located in cities in underdeveloped regions. The minimum capital requirements are also lower for underdeveloped regions.

In the priority scheme, specific sectors with high socioeconomic value-added capacity enjoy the privileges of 5th region instruments and support levels although the investment took place in 1, 2, 3, or 4th regions.

In the strategic scheme, the production of certain intermediate and final products with high import dependence is addressed provided that certain criteria are met.[1]

The general scheme covers rather modest instruments and is applied to all projects falling out of the scope of the other three schemes. Only the sectors that are mentioned explicitly as unable to receive incentives are not covered. In addition, certain medium-high technology projects can benefit 4th region terms, even if they took place in 1, 2, and 3rd regions (except greenfield investments in Istanbul) (MOIT, 2020).

The regional perspective is the backbone of the incentive structure. In this regard, interest subsidies are unavailable for 1st and 2nd regions. The amount of payback is 3 points for the 3rd region, 4 points for the 4th region, 5 points for the 5th region, and 7 points for the 6th region (Annex-1). It also applies to medium-high tech investments, priority and strategic investments; thus interest subsidies are available under most of the schemes applied under the system.

Interest subsidies have been a major incentive instrument since the 80s. It is occasionally implemented as a low-cost credit while sometimes taking the shape of an interest subsidy to bear funding costs. However, although many studies focus on tax incentive efficacy in Turkey, the capability of interest subsidies has not drawn much attention to date.

4. Interest Subsidies: Theory and Concept

Interest subsidies are classified under credit subsidies in the literature. Credit subsidy is defined as a government loan with a lower interest rate than the market or making credit available with less collateral to back up the loan, repayment deference, or longer installments (Steenblik, 2007).

The interest subsidy as we called it in this study, lowers borrowing costs for companies, increases free cash flows, and is also expected to ease the credit accession for a bit (Podpiera, 2011). It might help to overcome either market failures or structural weaknesses in the financial market to induce firms to expand capital holdings in productive assets, generate employment and economic growth (Dailami and Kim, 1994), or alter allocative efficiency (Lurie, 1982). Mankiw (1986) recommends that credit subsidies - guarantees or interest subsidies - are useful countercyclical tools when financial conditions are tightened.

4.1 Theoretical Framework

Apart from tax incentives, the roots of interest subsidy literature go back to the financial market frictions that cause interest rate equilibrium to fail in clearing off markets, thus necessitating state intervention. Therefore, the effect of financial market friction is worth mentioning.

Interest rates affect investment decisions via two mechanisms. First, commercial lending rates are the cost of machines and equipment (capital factor). Second, deposit or bond rates are the major alternatives for the rate of return on investment projects. Thereby the next episode will dwell on the interest rate/investment correlation without digging deep to stay on track.

The following episode will be spared to the investment/cash flow sensitivity. The rich literature on the cash flow sensitivity of investments would help to relate the funding cost or credit accession to the investment decisions to elucidate one more layer on the interest subsidies' success probability.

4.2 Financial Market Frictions

Financial market failure literature dates back to the famous information asymmetry article of Akerlof (1978) about the market of lemons. He exemplifies a local lending relationship in India where a high level of interest rates was the leading factor in landlessness because the local lender[2] grants only to those (1) who easily enforce his contract with or (2) those he has personal knowledge of their character. The author infers that this may cause other lenders to end up doing business with "bad" debtors, thus probably making a loss due to asymmetric information. The author addresses the importance of guarantees to keep good borrowers in the market.

Arping et.al. (2010) also states that credit guarantees could alleviate market failures led credit rationing because credit guarantees alleviate entrepreneurs' insolvency risk. Lelarge et.al. (2010) found that loan guarantees are effective in helping

[1] At least 50% share of the ultimate product must be supplied through imports nationwide; the import amount of the ultimate product must be at least $50 million for the last 12 months period which is not applicable for the goods with no domestic production; minimum investment requirement is 50 million TL, production must create minimum 40% value added within the borders of the country.

[2] Who is defined as a well-known local. There are other lenders in the market who are not linked to the central lending agency.

young French firms to grow. The study of Gale (1991) specifically dwells on theoretical aspects of credit programs and infers that, when credit policy is assumed to be constant, the existence of adverse selection in financial markets can lead to an increase in lending rates which may eventually cause banks' expected return to decrease. The hike in the lending rates may cause relatively risky projects to apply for costly loans, which have a higher probability of default.

Stiglitz and Weiss (1981) argue that the credit markets eventually become rationed. Because the equilibrium interest rate (r*) cannot clear off the market since banks are not keen to open a credit line to an individual who offered to pay more than r*, such a loan is likely to be perceived as risky. The expected return of loans at an interest rate above r* is actually lower than the loans the bank is presently lending, due to lower reimbursement possibility. Hence, r* affects the loan quality perception of the bank, so whenever lending rates increase, interest subsidies hypothetically would help desired projects to be successfully completed or induce banks to produce an optimal credit quantity (Minelli and Modeca, 2009). Information asymmetry puts more pressure on small firms (Myers, 1984). Entrepreneurs with high ability but low initial wealth have higher marginal products of capital relative to those with low ability but high initial wealth. This picture has a high probability of misallocating credits (Antunes et.al., 2015). In times of a negative shock to internal funds, leverage and lending rates increase. The interest subsidy can step in and compensate for the margin distortions (Correia et.al., 2016). Because, as credit conditions deteriorate, investment spending contracts and exacerbates the downturn through distortions on net worth and collateral values (Gilchrist and Himmelberg, 1995).

Contrary to Stiglitz and Weiss (1981); De Meza and Webb (1987) argue that credit market equilibrium may be characterized by overinvestment means that companies can be overly leveraged in the financial market even if it does not reflect market equilibrium. Thereby, the authors recommend additional investment tax for rebalancing which is not deemed to be valid in the Turkish context since the economy is floundering in the middle-income trap, which translates into a lack of investment quality and volume (Duran, 2019).

Financial market literature more or less agreed on market failures stemming from informational asymmetry which legitimizes the credit subsidies. However, the subsidy becomes efficient when the lending rates mount, financial conditions mount and surely where the social benefit from the last increment of subsidy equals the social cost associated with it (Shoup, 1972) in practice, designing a frequent Pareto efficient subsidy is impossible due to uncertainty about the response to the subsidy and other difficulties in estimating its benefits and costs (Lurie, 1982).

The information asymmetry literature seems to emphasize the market mechanism facilitator feature of the interest subsidies to back risky, high-interest-charged projects, yet findings that will be mentioned later on in this article will show that interest subsidies may have no impact on credit accession of so-called *risky* projects in the Turkish context.

4.3 Interest Rates vs Investment Expenditure

The interest rate sensitivity of investment decisions is rooted in the very first definitions of investment function. Bernanke (1983) indicates that high-interest rates are so depressing that even the tax reliefs are not able to offset the negative effect. Lawrence and Siow (1985) confirm the common thought stressing that higher nominal interest rates have persistent negative dynamic effects on investment spending even if the real interest rates remained constant, due to the elevating pessimism.

On the other hand, an early contribution has been made by Modigliani and Miller (1958) indicating that there are ample grounds to doubt that interest rates directly influence the investment expenditure. Krainer (1966) states that external finance mechanisms might not have been as valid as common thought presumes. The author seemed hesitant to draw bold conclusions contrary to the well-agreed literature but he adds that the link between interest rates and investment decisions might be overrated a bit.

Kohli (2001) states empirical evidence shows no significant response of private investment to interest rates or the cost of capital in India. The interest rates remained unchanged for years and investment was determined, besides demand variables, by credit availability. Even after the financial liberalization, interestingly, investments peaked when real interest rates were very high in 1996-1997, which means credit accessibility matters rather than the cost of financing. Study results differ depending on the context and time frame they have been applied, yet there may be no sound link between interest rate and investment expenditures. Günay, H., & Kılınç, (2015) argue that the credit volume is an essential factor for business cycles in Turkey as they also underlined the fact that historical investment expenditure swings are a lot higher than the consumption, thus investment volatility is an important source of GDP fluctuations in Turkey. The interest sensitivity of investment expenditure studies implies that the credit volume could be a vital determinant besides the level of the market interest rates.

4.4 The Corporate Finance and Investment Decisions

There is remarkable literature on whether corporate finance/cash flows influence investment behavior. These studies are motivated by explaining the business cycle fluctuations without relying on large production shocks. The neoclassical view of perfect capital markets suggests that investment and finance are treated separately. Because in perfect financial markets, external and internal finance become perfect substitutes under perfect information.

According to Modigliani and Miller's theorem (1958), a firm's value is independent of how it is financed; the planning for optimal financial strategy is not trivial, but it should have no bearing on the basic decision to invest which would take place wherever the rate of return exceeds the capital cost. On the other hand, a post-Keynesian, Kalecki (1937) claims that profits, a good proxy for available internal cash flows, have a

significant effect on capital accumulation because it is less risky than an external fund for two reasons; firstly, a large amount of investment endangers entrepreneur in case of a failure. Secondly, machines and equipment often act illiquid and probably would be sold for less than their real value in times of urgent liquidity.

According to the pool of funds view, several projects are available in a specific time frame for any company to invest, and a certain amount of funding has been made before an investment decision (Ferrara, 1966). Clark et.al. (2009) supports the view that companies have a desired debt ratio beforehand.

Besides, many studies emphasize the importance of financial constraints[3] especially for those in developing countries (Cull et al., 2015). Financial constraints are considered one of the major obstacles to investment according to developing country business leaders (Dethier et al. 2011). Moreover, due to weaker market mechanisms, developing country governments tend to play a larger role in channeling financial resources (Ayyagari et al. 2012). The corporate finance/investment relation seems to depend on the context, location and methodology of the studies, therefore the cash flow/investment literature is divided into two fractions. Empirical evidence will be mentioned below in two sub-sections.

4.4.1 Findings on Cash Flow are Important for Investment Decision

Gilchrist and Himmelberg (1995) tried to set up a model taking Tobin's q as a proxy of cash flows[4]. They introduced a term of fundamental Q[5] instead to incorporate investment opportunity and found that there is very little residual correlation between investment and cash flow for unconstrained firms, but there is a high degree of residual correlation for constrained firms. In addition, the authors found no excess sensitivity of investment to cash flow for firms with easy access to finance, as measured by the presence of either a debt or commercial paper rating. For firms without a bond or commercial paper rating, roughly 50% of the investment response to cash flow is potentially attributable to financial factors.

One of the most referred articles in the field, Fazzari et.al. (1987) emphasizes the fact that investment is highly correlated with cash flows or other measures of internal funds. This correlation arises in models of capital market imperfections because investment is directly linked to available internal funds when the company is credit rationed. In other words, the influence power of the cash flow is much higher for financially constrained firms[6]. Fazzari and Mott (1986-1987) examined firm-level attitudes between 1970 and 1982 in the US and they found that internal finance has a significant importance on investment decisions. Fazzari and Petersen (1993) focused on the role of working capital as a smoothening tool for companies' investment sensitivity during cash flow shocks in the US between 1970 and 1979. They find that investment sensitivity to cash flow is higher than in earlier studies when working capital is included in the model. In the regression model they applied, the coefficient of the working capital[7] variable was found to be negative on affecting investments which means cash flows are important for investment decisions of constrained companies.

According to Gross (1995), firms invest until they reach the desired capital stock level if they are non-constrained. Financially constrained firms prefer to borrow to prevent their capital stock level from falling further. He infers that firms borrow when internal resources are low and financial resources are closely related to investment behaviour. Small firms have a higher sensitivity to cash flows due to the volatile distribution of financial flows.

Hoshi et.al. (1991) also present evidence from two different sets of Japanese manufacturers; the first group has close ties with large banks and thus has less information asymmetry while the second group of companies has weaker relations with the bank. Study indicates that investments are more sensitive to liquidity when companies have more fragile relationships with the banks. Similarly, Shin and Park (1999) stated that investments of Korean group companies -Chaebols - have less sensitivity to cash-flows than other companies based on an observation of 629 companies. The study of Mulier et.al. (2016) examines SMEs in Europe those are not quoted on a stock exchange. The findings imply that constrained companies pay higher interest rates. They also iterate that financial shocks crash credit volume and constrained companies display the highest investment-cash flow sensitivity. The findings especially indicate the importance of financing for those having constraints.

[3] Financial constraints defined as inability of a company to acquire sufficient funds when there is a plausible funding cost reflecting real risk of a company or projects is possible to deliver (Maeseneire and Claeys, 2006).

[4] Author admits that it might be exclusionary for certain sub samples in the model.

[5] 'Fundamental Q' is computed by estimating a set of VAR forecasting equations for a subset of information available to the firm, and then evaluating a linear expectation of the present discounted stream of marginal profits to obtain the investment fundamental, thus reflects an attempt to include profit expectations to address signalling deficiency might have stemmed from Tobin's q. For instance, the firms identified as financially constrained are typically newer, smaller, and faster growing than other firms in the sample, the stock market is less likely to have accumulated the usual stock of knowledge that arises through detailed evaluation and monitoring of firms over time. Thus, Tobin's Q might contain less information about investment opportunities for 'new' companies than the companies have been defined as unconstrained.

[6] Constrained firms are generally identified by using a priori information such as size, dividend behaviour, and capital structure in the model.

[7] Working capital, also known as net working capital (NWC), is the difference between a company's current assets—such as cash, accounts receivable/customers' unpaid bills, and inventories of raw materials and finished goods—and its current liabilities, such as accounts payable and debts. It's a commonly used measurement to gauge the short-term health of an organization.

4.4.2 Studies Argue Cash Flow Does Not Affect Not Effective on Investment Decision

Rather than denying its effect, these studies seem to argue that cash flows might not be as effective as expected. They also indicate some methodological drawbacks. Mauer and Triantis (1994) emphasize the time lag effect of financing decisions for prospective investors and conclude that debt financing has a negligible impact on the firm's investment and operating policies. Gomes (2001) finds that there is a much lower correlation between Tobin's q and investment decision compared to the neoclassical model.

The study of Kaplan and Zingales (1997) is also one of the most contested and referred one. In light of the annual financial reports and executive statements of the companies previously declared as 'constrained', authors find that 85% of the constrained companies could have increased their investment — in many cases, substantially — if they had chosen so.

Becchetti et.al. (2010) indicate occasionally self-declared credit-rationed firms have excessive investment-cash flow sensitivity while admitting that only the credit-rationing status may overcome the nonmonotonicity critics brought forward by Kaplan and Zingales (1997). Becchetti et.al. (2010) acted as a mediator between the two opposing views underlining the constraint company definition.

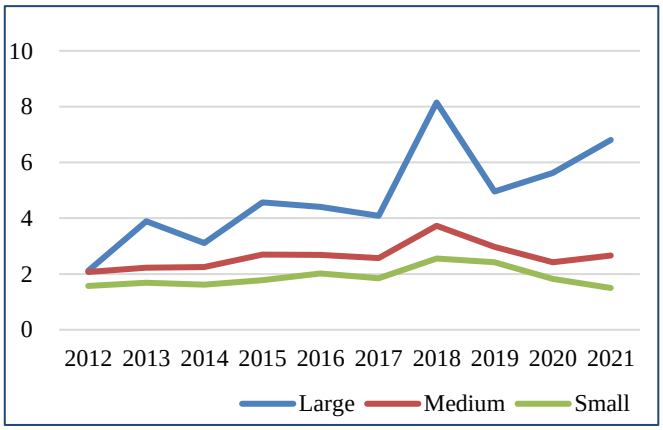
Shapiro (1986) provides a different angle addressing a common statistical methodology pitfall. When the underlying shocks to output and cash flows are autocorrelated, it is possible to obtain solid but spurious correlations between the variables. The study of Almeida and Campello (2010) contributes via the premise of the standard pecking order[8]. They state companies' investment choices might become endogenous to external financing decisions. Because in the study, companies facing higher external financing costs do not show a preference for internal funds. While it is still the case that such firms place a high value on internal funds, reducing external financing is not necessarily the best use of funds for them. In other words, internal funds and external financing can become complements rather than substitutes even when external financing costs are high. Authors also criticize the constrained firm definition focusing on companies that pay little or no dividends, small-scale and whose debt instruments are not rated because they claim that constrained companies can still have access to external finance. Studies on the negative side emphasize the constraint definition and some other colliding mechanisms and present external financing as a complement to internal funds.

4.5 Observations on Theoretical Aspects of Credit Subsidies

The financial frictions literature can provide mindful insights into current incentive legislation. Policymakers need to remember that financial market mechanisms might fall short to deliver an equilibrium interest rate to clear off the market. Suppose a credit market is unable to perform properly when lending rates are higher. In that case, then interest subsidy instruments become crucial to reduce funding costs and alleviate adverse selection, especially in times of credit crunches. Otherwise, credit guarantee type supports to enhance credit accession could be considerable. Inferences on guarantees are not perfect but partial substitutes to interest subsidies, because both instruments -supposedly- increase the chance of repayment and assure banks.

Relatively, higher funding needs of SMEs or start-ups are widely accepted phenomena that might also shed light on better interest subsidy practices for start-ups. Besides, at present, applying interest subsidies for only the 3rd, 4th, 5th and 6th regions (relatively underdeveloped) seems plausible; considering the probability of hesitant attitude of the lenders in these regions.

Figure 1. Share of financing cost in net sales (%)



Source: CBRT Aggregated Sectoral Balance Sheets

The mixed empirical evidence on the relationship between interest rates and investment expenditures made us think about the relative importance of the funding cost of the Turkish manufacturing companies among other balance sheet items. The share of financing costs in net sales is shown for the years between 2012 and 2021 with a breakdown on a scale of each company group in Figure.1[9]. The financing costs of the manufacturing companies are between 2% and 8% which is relatively low for all company groups compared with the other

[8] There are two mainstream funding decision theory. First one is the trade-off financing theory implies that decision on financing through equity or debt relies on the equilibrium between the advantage and disadvantage of the external finance. The second one is pecking order view dwells on the informational asymmetry in the financial sector which lead company to seek for internal resources before searching for an external finance due to its inevitably higher cost (Okuyan and Taşci, 2010).

[9] Company scale is determined according to the Bank for the Accounts of Companies Harmonized operating under the European Committee of Central Balance Sheet Data Offices. Companies with net sales amount lower than 10 million Euros are defined as small, companies with net sales amount between 10 million and 50 million Euros are defined as medium scale while companies with net sales amount higher than 50 million Euros are defined as large companies (CBRT, 2023).

cost types. The relatively low share of the financing cost might well indicate a limitation for interest subsidy tools to influence companies' investment decisions since the support would be unable to draw as much attention as other cost items in the balance sheet. The share of financing of larger scale companies is higher than medium and smaller scale companies, probably due to higher credit accession.

Studies claiming investments are sensitive to the cash flows are in line with market friction literature and necessitate an intervention to alleviate the adverse effects. It is obvious that the definition of financial constraints inevitably influences the study results, however almost in all studies, investment decisions of constrained companies have a certain degree of potential to be affected by cash flows. Returning to our core subject, we can infer that interest subsidies have a great probability of supporting constrained companies, assuming the interest subsidy would increase the fund transfer and facilitate companies to access credits. A certain amount of selectivity addressing the company's financial condition might be plausible. However, addressing informational asymmetry with guarantees would be easier and cheaper.

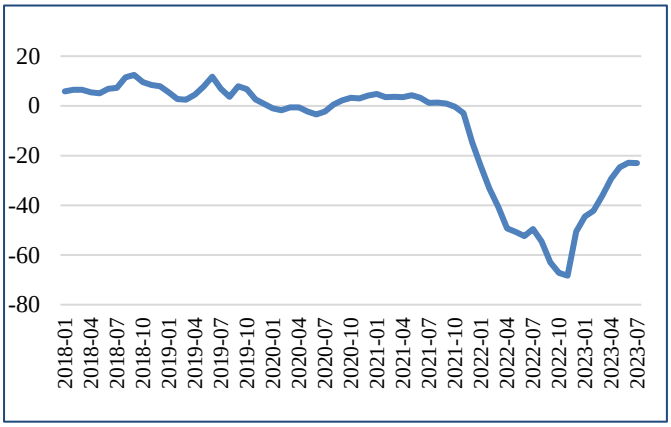
5. Are Interest Subsidies Matter for Investment Behaviour?

In this section empirical study results will be mentioned focusing on interest subsidies whether they are a determinant factor for investment decisions. Since not many studies focus on interest subsidies as we framed in this study, we decided to extend the analysis horizon to other studies exploring the effects of financial parameters under investment determinants. Financial parameter-based studies are picked from the studies analyzing the Turkish business environment.

5.1 Interest Subsidies vs. Investment Expenditure

In this section, the studies directly investigating the efficacy of credit subsidies for investment behavior will be examined in comparison with the Turkish context. Some studies analyzed credit subsidies as an umbrella term covering guarantees while others differentiated the type of subsidies.
Correia et.al. (2016) discussed credit subsidies as an alternative monetary policy instrument. Their study states high and volatile credit spreads should be corrected when financial intermediation is costly. Credit rationing occurs when banks charge higher interest rates, which drive some borrowers out of the market. Since interest subsidy bears the additional cost of credit, banks do not tend to increase the lending rate further, due to the risk of losing clients (Janda, 2011).

Figure 2. Real commercial lending rates (Weighted Average, %)



Source: CBRT Data Central

In Figure 2 real commercial credit lending rates in Turkey are shown for 2018-2023/July and the recent downward trend is crystal clear. Considering the recent steep decline in real commercial lending rates in Turkey, one can say that there is no coordination and mutual harmonization between the monetary and incentive policy tools since the interest subsidies persisted during the extremely low lending rate period.

This view is also reflected in the study of Podpiera (2011) which provides valuable insights from Serbia where interest subsidies were implemented as a substantial policy response to the global recession. It performed well according to the author, because several convenient pre-conditions were in place. First, the Serbian government has had fiscal resources available for the subsidies. Second, the government reacted swiftly during the crisis to counteract delinquent debtor blockages (defined as a specific feature of Serbia by the author). Third, the central bank allowed banks to deduct subsidized credit from the reserve requirement base. Fourth, a less concentrated feature of the Serbian Banking System enabled competition among commercial banks to keep their clients. According to the calculations by the author, the 2009 GDP contraction would have been 1-2% higher in Serbia if interest subsidies had not taken place. It is also calculated that the loan rejection rate decreased by 1% because of the interest subsidy scheme. It resembles the Turkish interest subsidy tool but there are certain differences. First, the Turkish scheme is always in place whether the economy is in a downturn or not. Second, the Serbian subsidy amount consisted of around 50% of all credit costs but in Turkey, the subsidy base points are fixed. Third, there is no coordination between the monetary policy and interest subsidy instrument and the two policy purposes are likely to contradict or overlap in certain occasions.

De Bruyne and Van Rompuy (1982) conducted an econometric analysis for Belgium and evidence shows that regional interest rate subsidies have a redistributive effect on investment. This result relates to the Turkish context because

interest subsidies are applied with a regional perspective (MOIT, 2023).

In the model designed by Antunes et.al (2015), banks handle everything and the government provides subsidies at the end as in the Turkish model. Presumably, interest subsidies reduced the lending rates to the level of deposit rates. Still, they turned out to be inefficient overall due to distortive distributional effects stemming from required austerity in payroll taxes because of the deficit it caused in the general budget. Authors concluded that countries should focus on financial reforms that improve the functioning of credit markets such as reforms that solve creditor protection, asymmetric information and intermediation costs, considering the bearings on the taxpayers.

Several studies examined credit subsidies in Brazil. Pazarbasioglu et.al. (2017: 20) analyzed 25 public companies between 2004 and 2012, and there was no significant relationship between companies' investment rate and the proportion of subsidized loans[10] which only helped companies to lower their financial expenses. These findings are also parallel with the inferences of Lazzarini et al. (2014) who indicate that subsidized credits finance large and profitable firms in general with no effect on their investments. With respect, Jo and Senga (2019) point out that the credit subsidies' results hinge on the companies' financial status. It can be helpful for SMEs to alleviate financial constraints to achieve an efficient and larger scale of production.

Lage de Sousa and Ottaviano (2014) also show that companies getting subsidized credits are not able to outperform non-subsidized companies. However, Cardoso et.al. (2011) examined subsidized credits for rural farmers in Brazil and found that the GDP contribution of the program exceeds the cost of the interest subsidies provided by the government[11]. Regional effects of interest subsidies seem more optimistic than overall influence.

Janda (2005) indicated that untargeted interest rate subsidies are powerless and become meaningful when channeled to high-risk recipients. However, uniform non-targeted credit guarantees improve welfare. The author also claims that the estimated amount of the fund transfer from the government is lower for credit guarantees when project diversity is high while budget cost goes down for interest subsidies when project diversity is low. Because, the participation cost of low-risk companies becomes the same as the participation cost of high-risk companies in the case of uniform interest subsidies (Janda, 2011).

A simple estimation might help to compare project diversity for the Turkish incentive system on guarantees and subsidies. Between 2010 and 2023[12], annually, an average of 6.758 incentive certificates for 158 sub-sectors have been delivered by the DG of Investment Incentives which implies a diversified project structure for the Turkish incentive system.

Gale (1991) examined all types of credit subsidies for the US and found that subsidies lead to major changes in the allocation of credit, but little effect on aggregate investment. According to Dinh et.al (2013), subsidies worked in Vietnam in the first half of 2009 (the global recession) but after that, some of the subsidized loans leaked into irrelevant activities (i.e. real estate or stock market speculation). Interestingly and undesirably, leakage elevates when economic growth perspectives are rather pessimistic, thus, interest subsidies are unable to counteract economic downturns under the boom-bust cycles[13].

According to neoclassical economics, without a loan subsidy, firms will determine production level where MRR is equal to the MCC, which determines their optimal total investment in productive assets, I*. When the credit subsidy is implemented, firms still won't change their investment in productive assets whatever the subsidy level is, because the loan subsidy has no influence on the MCC at I* and the remaining subsidized capital will be invested in speculative assets, which promises a better MRR under the subsidy. It also makes sense if we assume the current economic environment resembles a monopolistic competition market model with a decreasing MRR. When a company decides on one unit of increase in production, it would result in lesser revenue, thus a company can easily resort to speculative fields (Dinh et.al, 2013) as Demir (2009) finds the same tendency for Turkish investors in times of uncertainty. The authors infer that interest subsidies should be used for a limited timeframe and closely monitored. Turkish interest subsidies are also limited to the investment period but not monitored after the subsidy payment is provided.

Bosworth et al. (1987) also state that subsidized credit may simply induce borrowers to substitute debt for equity or capital instead of labor. The borrower may also use the funds for some entirely unrelated purpose.

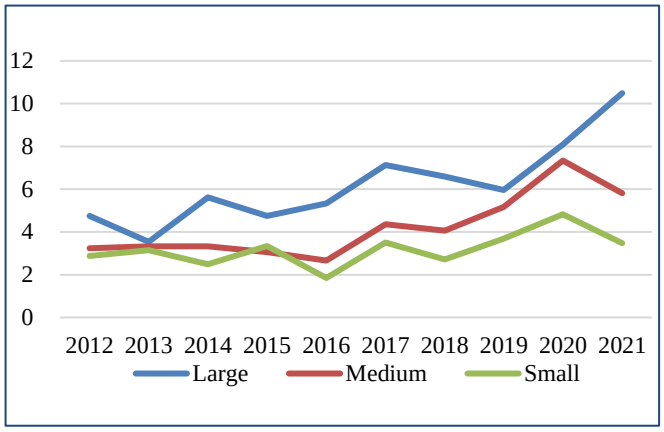
[10] Subsidized loans are given via Brazilian Development Bank (BDB) and the benchmark rate for BDB loans is set well below the monetary policy rate and often below the inflation rate (Pazarbasioglu et.al., (2017: 8).

[11] Interest subsidies or lower credit lending is a widespread tool in the agriculture sector in different forms. Li and Shen (2012) state that interest subsidies can be successful to keep labor in rural areas while Li et.al. (2013) states that interest subsidies able to increase factor employment and investment in advanced agriculture applications although admitting that wage and land subsidies are superior to interest subsidies. In terms of incentivised projects for all types of investment schemes, only 1.3% of the total incentivised projects took place in the agriculture sector between 2001-2020/March in Turkey while 53% took place in manufacturing and 25% took place in the services sector. Hence, interest subsidies focusing on the agricultural sector are just mentioned slightly. There are other types of special agricultural credit programs in Turkey as well (Cevik and Zeren, 2014).

[12] The period yearly incentive certificate data was available for the new incentive scheme.

[13] The years 1986-1988 is defined as *three low era* (low oil price, low inflation, low FX rate) which leaded to an investment boom in Korea.

Figure 3. Profitability rate in manufacturing (%)



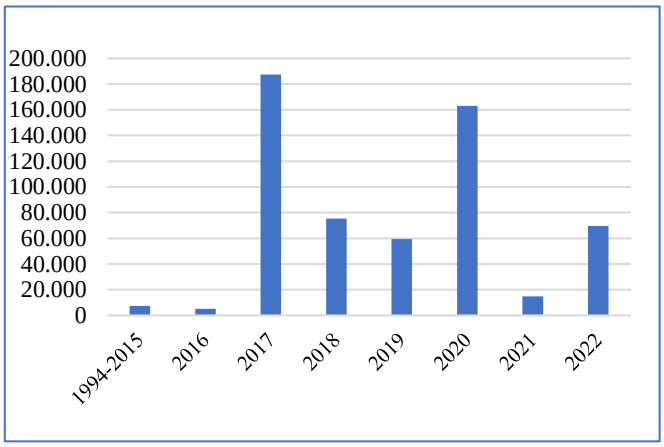
Source: CBRT Aggregated Sectoral Balance Sheets

Lapar et.al. (1995) examined a microenterprise credit program in the US and empirical results suggest that there might be no need for subsidized interest rates because there are strong indications that microentrepreneurs are capable of gaining high rates of return on capital thus they are capable of paying market rates of interest. The Figure.3 shows the profitability ratio for the company groups by scale in the manufacturing sector. Smaller-scale companies work with lower profitability in comparison with others, which might indicate a need for further action for lower-scale companies. Another study in Turkey infers that profitability eases credit accessibility for SMEs (Demirgüneş, 2016) who represent 78% of the total employment, 50% of private investment and 59% of exports in Turkey (Başkan and Benli, 2019). Hence any discriminative approach in favor of SMEs might well pay off in the Turkish context.

Rapisarda and Patacchini (2003) analyzed the credit subsidies in Italy between 1995/3 – 1999/2 and found evidence that subsidized loans tend to replace pre-existing loans, with minimal effect on investment. In addition, the substitution effect is pronounced for borrowers who seem to be financially unconstrained, reinforcing the argument that subsidies tend to reach firms that would have access to finance anyway. These results again address selectivity in credit subsidy design.

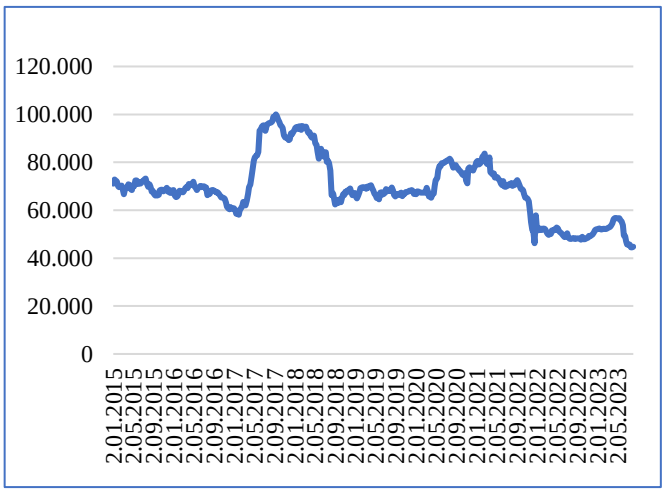
Wang (2013) has developed a model assuming some borrowers are rationed under separated equilibrium due to asymmetric information. Study results show that interest subsidies, loan guarantees, and monitoring cost subsidies are able to alleviate the problem of credit rationing in various degrees. Loan guarantees were found to be the most efficient, yet the interest subsidies entail higher distortionary taxation.

Figure 4. Total guarantee amount (Million TL)



Source: Credit Guarantee Fund

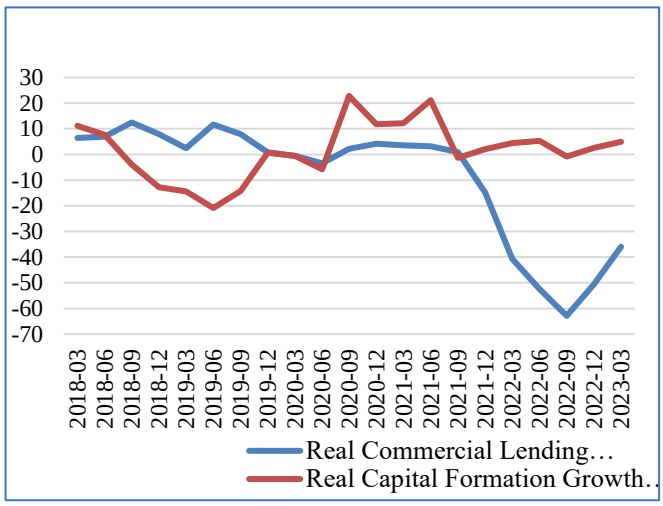
Figure 5. Commercial Credits (Million $)



Source: CBRT Data Central

In Figure 4, the amounts of the guarantees given by the Turkish Treasury Credit Guarantee Fund (CGF) are illustrated between 1994-2002. The Turkish Treasury pledged 25 billion TL in 2017 as collateral to the state-backed CGF and the guarantee amount surged quite steeply compared to previous years. (KGF, 2022: 50). Credit volume expanded substantially with the help of the CGF mechanism (Akcay and Güngen, 2019) as can be seen in Figure.5 which confirms the significant effect of the guarantees in the Turkish economy. According to anonymous expert views, CGF credit expansion contributed economic growth rate by 1,5-2 points per se in 2017 (BloombergHT, 2018). However, between 1994 and 2017, only 12% of the CGF guarantees were made available for underdeveloped regions of Turkey, most probably because of a lesser extent of economic activity in those regions. However, 45 CGF beneficiary companies stated that guarantees solved their funding constraints (Başkan and Benli, 2019).

Figure 6. Weighted Real Commercial Lending Rate vs. Real Capital Formation Growth (%)



Source: CBRT Data Central

In Figure.6, there is no significant correlation between real commercial lending rates and real capital formation, even after the extremely low-interest period we observed after 3rd quarter of 2021.

We can conservatively infer from all of the studies above that, interest subsidies may turn into null fund transfers from one group to another. The impact of interest rates and lending rates is rather limited especially compared to cash flow conditions and credit boom-bust cycles. The lesser share of financing cost in the balance sheets and much more importance attributed to the credit accession on investment decisions also rules out interest subsidies.

However, most of the studies point out the relative need for finance in smaller or constrained companies compared to non-constrained companies. Interest subsidies could be more efficient in times of credit crunch and downturns even if there is evidence on the contrary in Vietnam. Last but not least, empirical evidence mostly prefers guarantees over interest subsidies. The inferences seemed in compliance with the theoretical aspects underlining market frictions.

5.2 Interest Subsidies vs. Investment Expenditure

The rest of the studies focusing on financing-related investment determinants will be examined in this episode to broaden the scope of interpretation.

Post-Keynesians assume that profit rates are the main source of investment finance due to the degree of the confidence argument (Arestis, 1996) while later on Marquetti et al. (2010), Basu and Das (2017) use the profit rate to reflect the expectations of the entrepreneurs in the investment function.

Doruk (2017) studied the determinants of investments in the Turkish manufacturing sector and inferred that profit rates and cash flows positively affect investments. Yeldan et.al. (2002) found that profit margins and real wages have a significant positive effect on investments which underlines the demand side. Çonkar et.al. (2018) ran a Granger and the Toda-Yamamoto causality analysis and found that credit volume (including Islamic finance) is one of the determinants of investments. Rittenberg (1991) analyzed the impact of interest rate policy on investment spending in Turkey throughout both financial repression and liberalization and found that investments are encouraged by below-equilibrium interest rates while hampered by higher interest rates. Günçavdi and Küçük (2013) indicate that the credit policy and accommodative monetary policy with lower rates of interest could be the essential elements of economic policies that revive investments in Turkey. However, the authors examined the period of 1987:1–2007:4, considered the inflation rate as a proxy of uncertainty before the 2000s, and inferred that the decreasing interest rates played an essential role. But in the 2000s, other remarkable developments are not included in the regression as a former minister now at the Brookings Institution Kemal Dervis admits that the buoyant global economy in the 2000s was a big boon for Turkey's recovery (Wigglesworth, 2015) as well as political stability. Atiyas and Bakis (2014) also claimed that TFP growth was remarkable between 2002 and 2006 in agriculture, industry and services as a result of the relocation of the hidden unemployment from agriculture to other production fields. Jensen (2009) states financial and political uncertainty is found to be detrimental to investments in Turkey.

Based on interviews with 33 executives in the Turkish manufacturing sector, 60% of respondents state that future demand conditions and market share growth are their major investment determinants as suggested by Keynesian theories. Interestingly, no firm ever mentioned investment incentives as a determinant of investment. 95% of companies reported that uncertainties in demand or cost conditions are major impediments, while only 20% of firms mentioned 'cost of finance' as the most important problem. Besides, none of the holding companies cited the funding cost or loan accessibility as a source of impediment, which is another evidence of the adverse effects of informational asymmetry (Gezici, 2007).

Günay and Kılınç (2015) state that in Turkey, investment expenditure fluctuates substantially when divergence from the HP trend is calculated between 1990-2004. 1994 and 2001 economic crises (the latter was a twin crisis that hit banking and current account balance together) took place in this period and calculations showed that investment expenditure deviations from the HP trend were quite larger than GDP, whose swings reached up to +25% and down to -30%. They concluded that the credit cycles are an important component of the boom-bust cycles in investment expenditures while the non-tradable sector is more sensitive to the credit swings because of harder financial constraints as depicted by Tornell and Westermann (2005). Cyclicality inference is compatible with Post Keynesian framework and implies that when volatility is high, risk-averse executives perceive a crisis of confidence and cut investments even more than they would do in lower volatility. This is also the major motivation of internal fund preference which is deemed cheaper and safer (Gezici, 2007). Günçavdı and McKay (2003) also underline the

importance of macroeconomic instabilities and the availability of credit for Turkish manufacturing investments.

Kaya (2011) investigated the determinants of investment by looking at the squeezed financial conditions during the global recession and found that companies' investment decisions are positively affected by their cash holding and sales revenues. Yet there is no robust finding to claim a different attitude in different company groups. Including the global recession in the time frame might have blurred the possible discrimination among company groups since the global recession hit every economic agent hard enough. Egimbaeva (2013) analyzed investment cash-flow sensitivity in Turkey for 135 manufacturing companies listed in ISE and found that companies' investment decision is affected by cash flow, while the sensitivity is higher in constrained firms[14]. Özen and Erdem (2016) followed a similar path. They analyzed 125 manufacturing companies listed in ISE for the 1998-2010 period and stated that financial conditions affect investment decisions and its implications are more severe in constrained companies as Fazzari et.al. (1987) depicted. Yesiltas (2009) contributed in the same vein examining 9.400 manufacturing companies which account for almost 75% of total manufacturing employment under the CBRT data system and found a significant positive relationship between firms' investment and their cash flow. While the investment cash flow sensitivity differs across size and age groups, divergence is not statistically significant for the main sample. She states that Turkish manufacturing companies are constrained overall.

Okuyan and Taşci (2010) analyzed the 1000 biggest industrial companies in Turkey and found that both scale and profitability are negatively correlated to the tendency to borrow which indicates companies favor internal funds first, in line with the pecking order approach even if they are expected to suffer less from the informational asymmetry. Cetenak and Vural (2015) analyze 164 manufacturing companies between 2004-2012 and indicate that information asymmetry hits smaller and independent companies harder than other firms and their investment expenditures are more sensitive to cash flows.

The regression analysis of Vithessonthi et.al. (2017) provides useful insight for the financial determinants of investments. They find that the lending rate has a negative, and acquired credits have a positive effect on investment as expected with a nuance that the lending rate coefficient is significant only at the 10% level, thus authors infer that credit accession is a more important determinant than the lending rate. Another salient evidence is on investment opportunities which are measured via market-to-book-ratio and equity return[15]. The investment opportunity coefficient is positive and significant in all models computed, and more importantly, neither the lending rate nor the credit usage abates the sensitivity of opportunities. This implies market opportunities and values dominate the credit conditions. For constrained firms in the model, the effect of the supply of bank loans is evident while the lending rate is not. For constrained companies, the supply of loans matters more as expected.

Islam and Begum (2004) argued that investment expenditure is weakly responsive (-0.36%) to lending rates. The observation of Ahmed and Islam (2005) is also consistent with the general empirical evidence which states that investment spending is weakly sensitive to lending rates[16].

6. Conclusion and Policy Implications

Investment incentives have always been a major topic in the literature. Any public transfer from one group to another brings efficiency debates along and it is also controversial whether incentives spur investments or not. Incentive analysis mostly focused on quasi-tax incentives by nature since incentives mostly consist of quasi-tax instruments. However, even though interest subsidies have always been a crucial part of Turkish incentive history, efficacy studies did not pay great attention to interest subsidies.

The marginal value of any public fund is undoubtedly higher for developing countries and it becomes more important when it comes to a country like Turkey with a chronical saving deficit. It compels policymakers to find optimum incentive methods and levels to utilize public funds in the best way.

Interest subsidies differ from other types of incentives since conditions of the financial market, companies' financing preferences and accessibility are also important side factors that affect the outcome of the interest subsidy policy. First, financial markets have a great probability to suffer from informational asymmetry which holds companies back from accessing the credits and sometimes leads to overcharged lending rates. This type of friction is the major reason for government intervention in the financial system, which is also absolutely valid for Turkish financial markets as depicted in the CGF pledge impact above.

According to most studies in the field, there is also a strong correlation between cash flows and investment decisions although the constrained company definition is still contested. Constrained companies have a great probability of cutting their investments if they are unable to reach credits. In times of credit crunch or financial crisis; credit accession and

[14] Constraint criterias selected as dividends of previous period, small by size and younger by age. Hence sample is exposed to the criticisms of Kaplan and Zingales (1997). Besides, companies listed on ISE might not differ from each other in terms of informational asymmetry since all of them required to have certain equity, capital deliver accounts by independent audit agency and age depending on their main sector and structure. Criterias can be found on: https://www.borsaistanbul.com/en/companies/public-offering-and-listing-in-borsa-istanbul/equity-market/public-offering/bist-stars-and-bist-main/listing-requirements

[15] Equity return measured as the first difference in the natural logarithm of stock price at the end of the year.

[16] Lending rates are estimated from quarterly weighted average interest rates of all scheduled banks and adjusted by CPI.

investment confidence deteriorates, interest spreads widen and intervention becomes necessary, sometimes inevitable.

The need for financial support policies differs according to the scale of the companies. Smaller scale companies are more exposed to financial pressure due to the information asymmetry; thus market equilibrium interest rates are unable to clear off the market. Considering public finance, providing interest subsidies only for SMEs would pay off and relieve the pressure on the budget although it has a limited effect. Preferring guarantees could be even better for all.

The recent developments on the interest rates of the commercial credits, and enhanced CGF guarantee facility also reveal three important aspects of Turkish financial markets. First, Turkish companies suffer from financial market frictions and guarantees helped them a lot. Second, recent below-inflation commercial credit interest rates already provide a fund transfer to the companies and there is no coordination between incentive and monetary authorities. Third and most importantly, there is no meaningful correlation between real commercial lending rates and investments, even after the extremely low-interest period we observed after 3rd quarter of 2021.

Credit subsidies mostly seem more efficient or allocate resources towards underdeveloped regions. In Turkey, the interest subsidy tool is only available for relatively underdeveloped regions, which is an accurate step. However, the credit guarantee mechanism unfortunately fails to exert effort on underdeveloped regions, opening the door for a contingent set of policy combinations covering guarantee and interest subsidies for these regions.

A subsidy/guarantee combination can encourage investors and provide solutions for the financial oppression they are facing. However, most studies focusing on interest subsidies and financial determinants of investments imply that companies care about loan accessibility way more than the cost of the credit. Considering the findings altogether, as a better alternative, credit guarantees could well replace interest subsidies, especially for those companies that are constrained, smaller, or newer would be a good policy revision for the current scheme. Interest subsidies could be considered for mega projects with sound development goals, since the share of the financing cost is higher in large scale companies.

Annex - 1

REGIONAL INVESTMENTS INCENTIVE SCHEME MEASURES

INCENTIVE MEASURES			REGIONS					
			I	II	III	IV	V	VI
VAT Exemption			YES	YES	YES	YES	YES	YES
Customs Duty Exemption			YES	YES	YES	YES	YES	YES
Tax Deduction*	Rate of Contribution to Investment* (%)	Out of OIZ or IZ	15	20	25	30	40	50
		Within OIZ or IZ	20	25	30	40	50	55
Social Security Premium Support (Employer's Share)	Support Period	Out of OIZ or IZ	2 years	3 years	5 years	6 years	7 years	10 years
		Within OIZ or IZ	3 years	5 years	6 years	7 years	10 years	12 years
Land Allocation			YES	YES	YES	YES	YES	YES
Interest/ Profit Share Support	Local Loans		-	-	3 Points	4 Points	5 Points	7 Points
	Foreign Exchange/ FX|denominated loans				1 Point	1 Point	2 Points	2 Points
Social Security Premium Support (Employee's Share)			-	-	-	-	-	10 years
Income Tax Withholding Support			-	-	-	-	-	10 years

OIZ: Organized Industrial Zones
IZ: Manufacturing Investments in Specialized Industrial Zones
*Within the scope of incentive certificates issued for manufacturing sector (US-97 Code: 15-37); Rate of contribution to investment for each region shall get 15 points additionaly and tax deduction rate for each region shall be applied as 100 per cent for the investment expenditures that would be realized between the dates of 1/1/2017 and 31/12/2019.

Source: MOIT (2023)

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