

SUMMARY MESO STUDY: CONSTRUCTION OF BUILDINGS

1 SUMMARY

1.1 Demand conditions

The Brazilians call the business that deals with the production and commercialization of urban housing units the 'Construbusiness'. This chain includes the construction sector, the materials construction and services coupled with the construction (PCC USP 2003).

In Brazil, the housing deficit is very high, estimated at 5.21 million units in 1999, of which 4 million in urban areas. In 2005 this deficit was increased to 7.2 million. In the same year, only 270.000 homes were built (Santiago 2007). The housing deficit is the result of the period of crisis in the construction sector during the '80s and early '90s. The housing deficit has represented extremely high social cost, especially taking into account that 62% of the housing shortage refers to households with incomes of up to 5 Minimum Salaries (PCC USP 2003). The minimum salary in Brazil is currently R\$465 per month (Reuters 2009), this is about € 200,-.

The demand in the building sector is growing in the last years amid the crisis. The sales of building and construction materials in Brazil are 4,9% higher than the last year despite the recession (Cemweek 2009). The economic recession did have influence on the Dutch building sector. Effects of the recession in the building sector were unemployment and bankruptcies in the small business.

The demand of cement in Brazil is also strong. Brazil is now the fifth largest consumer of concrete in the world, behind China, India, Russia and the United States.

Despite of the demand, the design of buildings in Brazil faces some difficulties. The interpretation of customers' needs for the product is poor, companies use traditional building processes but they introduce technical innovations gradually and in differentiated ways, and the interpretation of design codes is poor (Novaes 1999).

The composition of the market in Brazil is very different from the Dutch market. The difference in trade flows between income classes is very high. Figure 2 shows a flow diagram of the construction sector in Brazil focusing on the "final consumer" in 2003. The figure indicates the trade flows and the composition of the construction market in Brazil. In this figure capital flows are indicated in national currency "real" (i.e. 23.70 bi = R\$ 23.70 billion) and the flow of materials are listed in quantities of housing units (E.g. 79 mil UH = 79,000 housing units and 28 mil = 28,000 housing units) (PCC USP 2003).

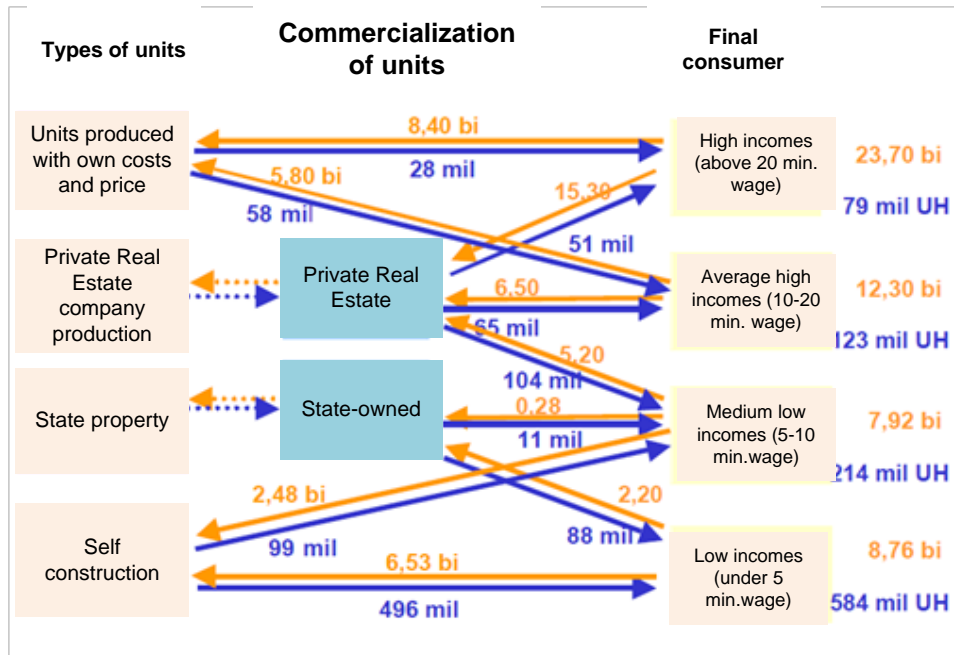


Figure 1 Flowchart of capital of the 'final consumer' (PCC USP 2003)

For example, in 2003 among 79.000 houses are build for the high incomes, of which 28.000 are build with own cost and price. Among 496.000 houses are build with self-construction (particularly in favelas). The government was responsible for 88.000 houses for the lowest income class. The most houses are built in the lowest income class, but the most money is spent in the highest income class.

The construction industry has one of the lowest coefficients of export: less than 2% of the total demand. The industry also influences directly and indirectly the demand for import and production of other industries (PCC USP 2003). The low export numbers of the sector, and consequently also of other related industries, are the main reason that the economic recession had no big influence on the construction sector in Brazil (CemWeek 2009). In the Netherlands import and export numbers are relatively low, only 1% of the total export turnover comes from the building sector. The construction sector stands for 6% of the GDP (Nederlandse Mededingings Autoriteit 2002). The import penetration of the dutch construction sector is 0.4% (Kox and Lejour 2004).

When we look at the wages and added value in this sector, then we might conclude that a shift is made to a more capital-intense market. Between 1996 and 2002 the Salary – Value Added ratio has decreased from 32.4 to 20.8. The Value Added per Person increased from R\$ 22.000 to R\$35.000, so fewer workers do more work. The more open market resulted in a strategy to adopt a more modern, labor-saving technology which increased profits relative to wages (Amann and Bear 2007).

The “Construbusiness” sector accounts for 15.6% of the GDP (Gross Domestic Product) of the country. The construction sector, which includes both buildings and heavy construction, accounts for about 10.3% of the GDP. Within that, it is estimated that residential buildings represent an amount between 6% to 9% of the national GDP (PCC USP 2003).

1.2 Factor conditions

1.2.1 Basic factors

Brazil was in 1995 the eight largest steel producing and exporting country in the world due to the excellence of its natural resources and the presence of a well-developed steel industry. Nevertheless, the use of steel in its internal market is completely different from that of developed countries. Only 4,5% of the domestic consumption is used in steel-frame construction, principally in industrial buildings and urban high-rise office structures (Lobo and Wildt 1998). The most common construction material is reinforced concrete. Remarkable

is that precast concrete is barely used in Brazil (Sena 2010). A reason for this is that traditional building methods are common in Brazil.

The Brazilians use Basic Unit Costs per square meter (CUB/m²) to indicate costs of construction projects (Sena 2010). CUB is a monetary indicator that shows the basic cost for construction. Its basic purpose is to discipline the market for real estate development, serving as a parameter in determining the cost of the construction industry. The CUB is updated monthly and is used in contracts (Wikipedia 2010).

The amount of people working in the so-called 'ConstruBusiness' was 3.63 million in 1998, up from 4 million in 1990, representing 6.1 % of total employed persons in the period. After 1990 the amount of workers declined until 3.2 million. This reduction is mainly due to the decrease of the GDP, the sector was getting smaller (PCC USP 2003). In 1994 the Real was introduced and the sector started to grow again. In the Dutch construction sector the number of working people was 393 thousand in 2007. This is about 8% of total jobs.

1.2.2 Advanced factors

Construction companies are trying to make their profit margins rise, through reducing costs, increasing productivity and the pursuit of technological solutions and production management in order to increase the degree of industrialization of the production process. Nevertheless, there are several factors that prevent a leverage of this movement and the beginning of a new phase of sustained development of the sector. These factors are low productivity, quality problems, high taxes of industrial components, a lack of knowledge of the consumer market, a lack of technical capacity and an inability of agents to properly assess market trends and future economic scenarios. (PCC USP 2003).

The Dutch construction industry is world leading in applying and adopting new developments. The building sector however is not very innovative. The building process is relatively traditional, it lends itself only to major process innovations. Opportunities for the sector are especially the demographic trends of the Dutch population and the global warming (sustainable building). Specialties of the Dutch building sector are building in soft substrates and greenhouses (NABU 2008).

1.3 Firm strategy

The market structure of both countries is examined; what strategy is used by the construction firms to stay competitive? The strategy used, influences the ability to adopt to the demand of the customer and to demands of the other markets. The Dutch construction industry is much larger than the Brazilian construction industry. Brazil is making big steps in modernizing the construction industry. In the Netherlands the market is rather stable, unless the recent fraud in the industry. The Dutch building construction sector is characterized by its small size. 99% are Small and Medium Enterprises (SMEs) and 91% belongs to small businesses.

The biggest construction company in Brazil is Odebrecht S.A., with Gross revenue of US \$17,524 million. However, the biggest building construction companies are Gafisa and Cyrela. Beside six Chinese contractors in the top 100 of largest companies in the world, there are only five other companies from developing world countries. Odebrecht is on the 79th place with only Turkey's Enka (60th) and India's Larsen & Toubro E&C (72th) in front. Andrade Gutierrez is the only other company in the top 200 on the 87th place (Sleight 2008). Gafisa and Cyrela are outside the ranking. In the Netherlands the biggest construction company is Royal BAM Group, with Gross revenue of € 8,835 million (≈US \$12.000). On the world ranking they are on the 27th place (2008). Besides the BAM nine other Dutch companies are found in the top 200 largest companies (Sleight aug 2008).

The import penetration for the construction sector in Brazil is about 67% (2004). This is the ratio of import of a construction product to the total sales of the product (value of import + value of domestic production). In 1993 this rate was 47%. The reason for this increase is the opening of the economy. Greater exposure to international competition force firms to make a substantial effort to increase their efficiency. This can also be seen when the % productivity change is examined between 1996 and 2002. The production change in the construction material is almost 60%. Construction materials are needed to construct the buildings, so this is a good indicator. When we look at the wages and added value in this sector, then we might conclude that a shift is made to a more capital-intensive market. Between 1996 and 2002 the Salary – Value Added ratio has decreased from 32.4 to 20.8.

The Value Added per Person increased from R\$ 22.000 to R\$35.000, so fewer workers do more work. The more open market resulted in a strategy to adopt a more modern, labor-saving technology which increased profits relative to wages (Amann and Bear 2007).

The Netherlands already has an open market due to the EU. In the last 10 years the presence of foreign construction companies in the Netherlands has increased. This is mainly due to the stable economy and the booming economy around the turn of the century. This has led to more competition by the big projects, but foreign companies cooperate closely with the Dutch companies. The language is a barrier for foreign companies, just like environmental knowledge and culture (Groot and Jansen 2005).

1.4 Related and supporting industries

Since domestic competition is more direct and impacts earlier than steps taken by foreign competitors, the stimulus provided by them is higher in terms of innovation and efficiency. For this reason, the cooperation between contractors and subcontractors is described in this subsection. As competitive pressure rises in the industry, firms have to rely on supporting firms and concentrate on their core competence. The effectiveness and efficiency become increasingly important.

Large Brazilian construction firms use subcontractors and labour recruiters to gain access to a flexible workforce, rather than hire workers directly on legal contracts. It is a long established practice for main contractors to subcontract much of the work on a 'labour only' basis. Then, the subcontractors recruit labour through intermediaries, known locally as 'gatos'. This is done because the on-costs are very high in Brazil and payment is on task basis.

Every Brazilian producer along the value-added chain rejects criticism of his lack of competitiveness by pointing to the inefficiencies of the production stages upstream from him. This creates a situation in which no link in the chain feels responsible for undertaking efforts to improve the competitiveness.

Some Brazilian authors like Sera (2001) have signaled that subcontractors are generally subordinated to the wills of the constructors. The imposition of the decisions of the latter prevails most of the time. The selection of subcontractors takes place only on price. Nevertheless, this characteristic can rapidly change, as subcontractors tend to enlarge their role in the construction process by supplying materials, design and maintenance (Shimizu and Cardoso 2002). When this change takes place, the Brazilian construction sector can make a great step in optimizing the supply chain.

In the Netherlands is the current practice in construction industry seen as problematic by the government as well as the construction supply chain. The separation of design and construction is characteristic for this industry. Cooperation between firms is on an ad-hoc basis; new coalitions are formed for every project. This ad-hoc cooperation does not lead to an incentive for close cooperation, a competitive and conflicting situation is created. This all leads to distrust and suspicion. Therefore innovation is hard and will not pay off. Also in the Dutch market, price is the selection criteria. In the last few years a change is taking place where firms try to work more in a network instead of market. Also, quality is a more common selection criterion besides price. This leads to more strategic cooperation and can result in a less strict separation of design and construction (Doree and Veen 1999).

1.5 Government

The government may influence an economical sector via encouragements and restriction, for instance via investments, protective legislation and international agreements. Considering the role of the government in Brazil and the Netherlands is important to compare the construction sector of the two countries.

The Brazilian government extended a tax break for construction materials till the end of the year. The measure was aimed at reducing pressure on prices because of heated demand, Finance Minister Mantega said. Consumers were snapping up construction materials ahead of the expiration of the tax, which was originally set to end with the first half of 2010 (TradeSignal 2010). The Brazilian government also invests in construction to facilitate the 2016 Olympic games, next to this the Brazilian government also plans to invest in the ports of Rio de Janeiro. As a part of the Growth Acceleration Program (Programa de Aceleração do Crescimento, also

known as PAC), Brazilian government plans to invest US\$ 157 billion to reduce the housing deficit (Loudiyi 2010). Also further incentives for the construction industry are proposed as part of the PAC, the government announced tax incentives to incentivize infrastructure projects (BDO 2009).

In comparison to this the Dutch government announced measures to support the construction sector in surviving the mortgage crisis, there are also measures which existed before the crisis. As a first measure the government stimulates homeownership with mortgage interest deduction. Next to this homeowners have a tax advantage for exemption from endowment (Bouwend Nederland 2010). Among these are encouragement of the expansion and construction of hospitals, but also a law that lets housing corporations buy and rent houses (Wolff 2009). But these corporations tend to hoard money they get from the government (Algra 2006).

In addition to inland investments, Brazil also benefits from the trade agreement of Mercosur, a free trade agreement between Argentina, Brazil, Paraguay, Uruguay, and Venezuela (Laird 1998). This agreement allows Brazilian contractors to easily compete in bidding procedures in partner countries. In comparison to this the Netherlands have the EU, this union allows contractors to have cheap employees from for instance Poland. Winning contracts should also be easier, but it is clear that small companies are not easily able to do this, because of lack of knowledge of national construction regulations.

Bureaucracy is a weakness of Brazil being a trading partner. This because bureaucracy delays the execution of projects, and because money continues to rake due to corruption. Brazil is on the 113th place on the ranking of countries, with regulations for getting a construction permit (Doing Business 2009). The Dutch construction sector also suffers from a vast amount of complex regulations (Creusen 1999). This regulations consist of employee legislations, fiscal legislation, and legislation for the execution of projects (Infrasite 2007). This leads to a 104th place in the list of countries, with regulations for getting a construction permit (Doing Business 2009).

The Dutch government has set minimum environmental standards in building regulations (Bouwend Nederland 2010).. Sustainable building in the Netherlands is referred to as doing more than required by law. The Dutch Ministry of Housing, Spatial planning, and the Environment (2009) puts in on 'preserving employment in construction, promoting residential energy conservation and ensuring the continuation of house building and the community-based approach (Ministry of Housing Spatial planning and the Environment' 2009).

1.6 Chances

Chances are accidental circumstances in the sector. Known chance factors are: wars, crisis, climate factors, rate of exchanges and so on. Chances can create discontinuities in the development of a sector, these may lead to advantages or disadvantages with respect to other countries.

A big opportunity for Brazil is the hosting of major sports events as the 2016 Olympic Games and the 2014 FIFA World cup. These events will result in a large number of contracts for construction of for instance indoor sports facilities, hotels, shopping malls, and airport terminals. To support the development of the cities and Brazilian economy, government is planning revitalization of the Harbor area of Rio de Janeiro, this includes the construction of hotels, shops, restaurants, and homes (Agentschap van Economische zaken 2010). The Netherlands are also planning to host the FIFA world cup. But unlike Brazil, the Netherlands does not plan to build a lot of new infrastructure (The HollandBelgium bid 2010), because most of the infrastructure needed, already exists.

Another opportunity for Brazil is the mortgage crisis in North-America, as investor aversion to risk, makes them seek other markets to invest their money in. Investing in Brazilian real estate projects is therefore realistic (Rocha 2007). This opportunity also refers to a threat, for a long time the Brazilian economy was known for its economic instability and unpredictability. According to the last ten years the Brazil national politics is stable, and while political stability in Brazil relates to economic stability, this suggests that an economical crisis is not likely to happen.

Next to this Brazilian opportunity, the Dutch construction sector had first hand experience of a risk of working outdoors. Many companies faces troubles as resulting from harsh winter (Taal 2010). The harsh winter in combination with the economic crisis, lead to the bankruptcy of a number of Dutch companies. The economic crisis is likely to have a long lasting negative impact on the Dutch construction sector (Peels, Udenio et al.

2009). Another possible threat for the Dutch sector is a corruption scandal like the construction fraud (van Damme 2002), Dutch contractors still suffer from the fines they got (Vulperhorst 2005). This also lead to tightening of the rules for winning contracts.

2 REFERENCES

- Agentschap van Economische zaken. (2010, April 2010). "Brazilië." from <http://www.evd.nl/home/landen/landenpagina/land.asp?land=bra>.
- Algra, W. (2006). "Rijke woningcorporaties vormen mooie schietschijf " *Volkscrant* Retrieved April 2010, 2010, from http://www.trouw.nl/nieuws/economie/article1363751.ece/Rijke_woningcorporaties_vormen_mooie_schietschijf_.html.
- Amann, E. and W. Bear (2007). "Neo-liberalism and market concentration in Brazil: The emergence of a contradiction?" *The Quarterly Review of Economics and Finance* **48**: 252-262.
- BDO. (2009). "Brazil: Opportunities and barriers to inbound construction." Retrieved April 2010, 2010, from <http://bdo.scripthandler.com/g20/pdfs/Brazil.pdf>.
- Bouwend Nederland. (2010). "Duurzaam bouwen." Retrieved April 2010, from http://www.bouwendnederland.nl/dossiers/Pages/Duurzaam_bouwen_79.aspx.
- Bouwend Nederland. (2010). "Woningmarkt." Retrieved April 2010, from <http://www.bouwendnederland.nl/web/speerpunten/Pages/default.aspx>.
- Cemweek. (2009). "Brazil's building sector continues growth amid crisis.", from www.cemweek.com.
- Creusen, H. (1999). "Housing construction: between competition and regulation." *CBP Report 2*: 20-23.
- Doing Business. (2009). "Economy Rankings." Retrieved April 2010, 2010, from <http://www.doingbusiness.org/economyrankings/>.
- Doree, A. G. and B. v. d. Veen (1999). Strategische allianties in de bouw Van hooggespannen verwachtingen naar concrete actie. Enschede, Universiteit Twente.
- Groot, d. P. J. M. and d. F. J. Jansen (2005). Buitenlandse concurrentie op de Nederlandse bouwmarkt. *EIB*.
- Infrasite. (2007). "Bouwend Nederland: Bouw gaat gebukt onder regels." Retrieved April 2010, 2010, from http://www.infrasite.nl/news/news_article.php?ID_nieuwsberichten=7555.
- Kox, H. and A. Lejour (2004). Een nieuwe WTO ronde voor diensten, mogelijke gevolgen voor Nederland.
- Laird, S. (1998). "Mercosur: objectives and achievements." *Economic Notes. Country Department 1*.
- Lobo, M. C. and R. Wildt. (1998). "The challenges of Steel Construction in Brazil.", from <http://www.cieg.ufpr.br/steel.ciegufpr.pdf>.
- Loudiyi, I. (2010). "Brazil Announces Phase Two of the Growth Acceleration Program." Retrieved April 2010, 2010, from <http://blogs.worldbank.org/growth/brazil-announces-phase-two-growth-acceleration-program>.
- Ministry of Housing Spatial planning and the Environment'. (2009). "Sustainable construction key to the Dutch government's green crisis package." Retrieved April 2010, 2010, from <http://www.vrom.nl/pagina.html?id=39180>.
- Nederlandse Mededingings Autoriteit. (2002). "Rapport B&U sector." Retrieved May, 2010, from www.nmanet.nl.
- Novaes, C. (1999). "The Building Construction Sector Modernization in Brazil and Design Quality Improving." *CIB REPORT*: 415-426.
- PCC USP (2003). "O future da construção civil no Brasil. ."
- Peels, R., M. Udenio, et al. (2009). Responding to the Lehman Wave: Sales Forecasting and Supply Management during the Credit Crisis, BETA Working Paper Series.
- Reuters (2009). "Brazil raises '09 minimum wage 6.4 pct to 465 reais. ."
- Rocha, A. (2007, April 2010). "It's Boom Time for Construction in Brazil and the World Is Chipping In ", from <http://www.brazzil.com/home-mainmenu-1/186-december-2007/10009.html>.
- Santiago, J. C. (2007). "9 Reasons to Invest in Brazil's Real Estate Market." from <http://www.propertycommunity.com/forum/buying-overseas-property/3246-9-reasons-invest-brazil-s-real-estate-market.html>
- Sena, N. (2010). Interview with Brazilian Urban Planner/Architect.
- Shimizu, J. Y. and F. F. Cardoso (2002). "Subcontracting and cooperation network in building construction: A literature review." *Proceedings IGLC*.

- Sleight, C. (2008). "The world's 200 largest construction companies." Retrieved 22 april, 2010, from <http://www.khl.com/magazines/international-construction/detail/item26644/FULL-REPORT:-The-world's-200-largest-construction-companies/>.
- Sleight, C. (aug 2008). "The world's 200 largest construction companies." Retrieved 22 april, 2010, from <http://www.khl.com/magazines/international-construction/detail/item26644/FULL-REPORT:-The-world's-200-largest-construction-companies/>.
- Taal, G. (2010, April 2010). "Lange winter veroorzaakt extra hinder voor bedrijven." from <http://www.cbs.nl/nl-NL/menu/informatie/deelnemers-enquetes/bedrijven-instellingen/coen/publicaties/2010-0308-tk-31.htm>.
- The HollandBelgium bid. (2010, April 2010). "Infrastructuur." from <http://www.thebid.org/over-the-bid/infrastructuur/>.
- TradeSignal. (2010). "Brazil Government Extends Tax Break For Construction Sector." Retrieved April 2010, 2010, from <http://www.tradesignalonline.com/Markets/Story.aspx?id=604424&cat=5>.
- van Damme, E. (2002). "Bouwfraude in breder perspectief." Open Access publications from Tilburg University.
- Vulperhorst, L. (2005). "Verzwegen onderneming. Ondernemers, overheid en het einde van het bouwkartel (2001-2005)."
- Wikipedia. (2010). "Custo Unitário Básico. ." from <http://pt.wikipedia.org/wiki/Cub>.
- Wolff, J. (2009). "Bouwbranche en kredietcrisis – De overheid praat weer mee " Retrieved April 2010, 2010, from <http://www.nedubex.nl/nieuws/bouwbranche-en-kredietcrisis—de-overheid-praat-weer-mee.html>.