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**Look What the Cat Dragged In:
National Responses to the EU Packaging and Packaging Waste Directive¹**

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Abstract

In 1994, the European Union approved the Packaging and Packaging Waste Directive (Directive 94/62/EC) having as a primary goal to mandate the adoption of national legislation targeted at the increase of recovery and recycling goals by member States. In spite of the flexibility allowed by the EU in choosing the path towards goal attainment, a significant number of countries adopted voluntary agreements generally known as Green-Dot consortia.

The main research question reflects this concern over the dominant governance structure adopted, the Green Dot agreements: Did voluntary agreements improve the performance of national recycling systems or did they favour collusion practices that dominate the industry, impose barriers to entry by new firms, and generate social welfare losses?

The paper discusses the alternative governance structures to manage packaging waste (command-and-control regulation, market-based instruments, and voluntary agreements) and focuses on the economic transaction costs entailed by each of these alternative solutions. It is stressed that proper institutional design is crucial in order to minimize these transaction costs and improve the degree of efficiency of these governance structures.

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1. Introduction

In 1994, the European Union approved the Packaging and Packaging Waste Directive (Directive 94/62/EC) having as a primary goal to mandate the adoption of national legislation targeted at the increase of recovery and recycling goals by member States. Although Directives work as constraints to national policy implementation, one can also expect that national government officials and regulated industries will exhibit adaptive behavior in order to pursue self-interest, engaging in what Sbragia (1996) called the politics of circumvention.

In spite of the flexibility allowed by the EU in choosing the path towards goal attainment, a significant number of countries adopted voluntary agreements generally known as Green-Dot consortia. These interfirm cooperation agreements aiming at reducing uncertainty and stabilizing interaction between actors involved in the recovery and recycling businesses influenced the final form of national regulation (Whiston and Glachant, 1996). Voluntary agreements are favoured by national firms (manufacturers, importers and packagers) because they allow them to keep control over the recycling process, while deflecting most of the cost imposed by the EU Directive through cooperative practices. However, the Directive triggered regulatory changes in each European country, opening a window of opportunity for the “capture” of the regulatory process by the industry.

Voluntary agreements are considered third generation policies, following command-and-control regulation and market-based policies. Although these agreements are traditionally viewed as resulting from hard bargaining and negotiation between private interests and governmental regulatory bodies, in the waste management sector they have often become associated with price controls administered by a governmental body with coercive powers (as the National Solid Waste Institute in Portugal) or with ‘vertical integration’ of solid waste management activities with the consortium dominating the entire process of collection, recovery, and recycling as in France (Buclet and Godard, 2001) and Germany (Lehmann, 2004).

The main research question reflects this concern over the dominant governance structure adopted, the Green Dot agreements: Did voluntary agreements improve the performance of national recycling systems or did they favour collusion practices that dominate the industry, impose barriers to entry by new firms, and generate social welfare losses?

In a recent article, Lehmann (2004) highlights the difficulty in reaching general conclusions about the outcomes of the adoption of Green Dot Consortia across Europe. The author carefully argues that, “to derive net decreases in welfare from these [governance structures] features by *exclusively* pointing to their potentially anti-competitive effects means jumping to conclusions too quickly” (Lehmann, 2004: 445).

The following section places the debate of national governance structures in the packaging sector in the appropriate context, by highlighting the implications of EU Directives in general and of Directive 94/62/EC in particular. In the third section, I turn to the governance structures adopted by EU member states and present a ‘governance structure triangle’ to help framing the discussion concerning national responses to the Packaging and Packaging Waste Directive. The fourth segment deals with the transaction costs faced by each specific governance structure and suggests design features that can help national governments to overcome these transaction costs. The concluding comments address directions for future research, with a special emphasis placed upon explaining the diversity on the evolution of governance structures and their characteristics resulting from political transaction costs.

2. European Union Directives: Mandates for National Policy Change

European Union (EU) directives can be regarded as mandates to national governments forcing them to develop policies in order to reach specific targets defined in the Directive. Some Directives are extremely detailed, specifying the goals to be pursued and the means to attain them. Others, however, mandate goals, but are much less demanding as far as the means to reach them.

The empirical study of mandates in an intergovernmental context has been developed for federal and state level mandates in the United States, Australia and New Zealand. For example, Jenks (1994) found that, in the case of North Carolina’s counties compliance with a solid waste mandate, both sides were able to develop a problem-solving approach that not only reduced the amount of conflict in implementation, but also improved policy outcomes creating win-win results. May (1995) analyzed the implementation of cooperative mandates in New South Wales (Australia) and in New Zealand and found that commitment and capacity by local governments are necessary to enable the development of facilitative implementation styles. May and Burby (1996) compare the performance of state hazard-mitigation mandates in Florida and New South

Wales in terms of procedural and substantive compliance by local governments. When governments are not committed to mandated policies, coercive mandates produce higher rates of procedural compliance. When commitment is present, cooperative policies work better over the long run in assuring commitment and substantive compliance. The dilemma is how to motivate and improve the performance of lagging jurisdictions, while avoiding imposing the heavy-handed tools of regulatory federalism on cooperative ones. What Jenks describes as a problem-solving approach to intergovernmental conflict is elsewhere described as cooperative mandate design (May, 1995; May and Burby, 1996), co-production (Godschalk, 1992), and collaborative planning (Bollens, 1992; 1993).

Hence, mandates can be best seen as changes in policy venues, in the sense that they reduce national governments' authority to decide over a certain issue, obligating them to comply. In the same way, the rules established at the EU level constitute constraints that induce stability in national government performance. However, even though the EU level Directive is the same for all countries, the way it is implemented varies across national governments depending on national governance structures (institutional arrangements) and transaction costs.

National rules confer advantages to certain individuals or groups that will oppose efforts to changes in rules detrimental to their own projects (Goodin, 1996). Moe (1990) contended that institutions are not only a way to solve problems of collective action, but also instruments of coercion and redistribution. Thus, institutional design is not neutral; it creates winners and losers and induces equilibrium in the political system, by favouring certain policy choices in detriment of others. In other words, because institutions shape preferences of individuals and groups, they also favour the preservation of the *status quo* by introducing stability in social interaction.

The EU Packaging Directive (Directive 94/62/EC) established a 25% recycling goal, a 15% recycling target for each material (glass, paper, metal, and plastic), and a 50% recovery goal to be met by 2001. This deadline was extended to 2005 for Portugal, Ireland, and Greece³. These regulatory targets imposed by the Directive and the shifting of responsibility for managing packaging waste to the industry can be explained by an extensive list of factors which include the lack of landfill space, public opposition to

³ The New Directive sets targets for December 2008: 60% recovery, 55% recycling, 60% glass, 60% paper, 50% metal, 22,5% plastics, and 15% wood. The deadline for Portugal, Ireland, and Greece is December 2011.

incineration, stricter regulations on landfills and incinerators and bans on waste imports by European countries. The push for the principle of producer responsibility included in the Directive was also strengthened by the perception that marketing purposes motivate packaging decisions (Ackerman, 1997).

Some criticisms to the Directive were that it was “a regulatory method of waste control (...) developed in an attempt to make the ‘polluter pay’” and that “command and control approaches, such as recycling and source reduction targets are most likely to be cost-ineffective and dynamically inefficient, as firms will have little or no incentive to develop new technologies which facilitate high recycling rates or light-weighting.” (Turner, 1996: 460-1). These criticisms may have proved premature, as more and more countries adopted the Green Dot governance structures and these arrangements were refined to correct for the initial problems.

The following section presents distinct governance structures employed around the world to manage the recycling sector. The discussion is framed by the conceptualization of recycling governance structures as a triangle, where market, hierarchy, and voluntary solutions are the three vertices. The goal is to identify governance features that will allow placement of real world examples within this triangle, in order to compare different systems by linking structural characteristics to performance.

3. Variability in Packaging Recycling Governance Structures

The literature on new institutionalism in economics has presented discussions of the make-or-buy decision faced by firms in the economic market. Similarly, the adoption of the producer responsibility principle by Directive 94/62/EC forced firms from the packaging industry to face a choice: either cooperate through voluntary arrangements or stay isolated in the market and recycle their own packaging waste. This last option, as we shall see, was not truly an option, given the astronomic collection and sorting costs and practical difficulties faced by retail manufacturers in the recycling market.

The degree of intervention (contract features) becomes a matter of weighting the market transaction costs faced by firms against the transaction costs experienced by the different hierarchical arrangements (contracts). As Coase correctly put it, “the problem is to avoid the more serious harm” (1960: 2). In other words, the number of decisions concerning a recycling policy can be left to the market, dealt with voluntary agreements or centralized at the national level (hierarchy). Most likely, it will be a mixed solution,

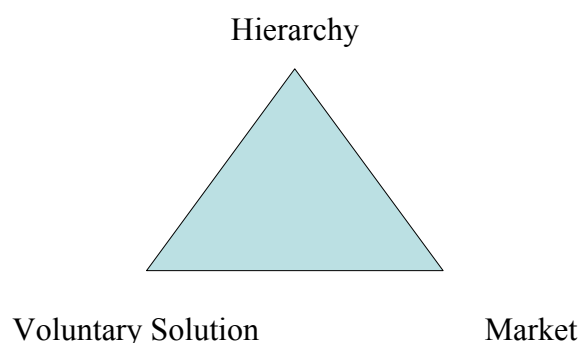
making it necessary to identify criteria to evaluate the positioning of each national government recycling policy.

In the case of the Packaging and Packaging Waste Directive, the majority of EU countries opted for a mixed solution: mandate goals and make firms operating in this sector responsible for managing packaging and packaging waste, while allowing the creation of voluntary agreements (similar to Green Dot) to facilitate recovery and recycling of packaging materials. The rationale behind this approach is the uncertainty regarding governance structure technical and financial performance as well as different civic and social background of EU member states.

Some authors point out the merits and problems involved in target mandates coupled with a more decentralized implementation. On one hand, the simultaneous development of competing governance structures allows comparisons of performance as well as socially tailored solutions. On the other hand, it may increase negative externalities adversely affecting interstate trade and environmental protection (Buclet and Godard, 2001).

Taking the Packaging Waste Directive as a given, national strategies of implementation can be best described using a triangle with the three vertices being market-based strategies, voluntary/cooperative agreements and command-and-control/deterrence based strategies. These vertices can be regarded as ideal types and help frame the national tendencies as far as the implementation of EU Directives. The governance structure triangle is depicted in figure 1.

Figure 1 – Governance Structure Triangle



This section attempts to summarize the diversity present in packaging recycling governance structures by characterising them according to policy instruments employed

by national governments. The goal is to identify the instruments that would be used if national governments decided to adopt each of the three governance structures.

3.1. Market-Based Solutions

A market-based organization of the recycling process entails, almost by definition, minimal government intervention. The consequences of having a free market operating in this sector will be discussed in section four, but it is generally agreed that market-based strategies do not imply government *laissez-faire*. The adoption of economic incentives can also be regarded as market oriented, even if this implies governments actively legislating the implementation of these instruments.

The UK 1997 Packaging ordinance employs a form of tradable permits (Producer Responsibility Notes) to implement the polluter-pays principle. This governance structure stimulates competition between independent recycling and compliance schemes allowing producer companies to take full responsibility for recycling or shop around for the best deals. Although the UK system is the closest to a market-based one (right hand side of the triangle above), there is still a large governmental role, contrary to what some have argued (Strobl and Langford, 2002). The governance structure is based upon market mechanisms and economic instruments, but these are engineered and approved in national legislation. The UK Environment Agency is also responsible for monitoring producer compliance and mandating earmarking of reprocessor revenues for reinvestment in the recycling sector (Bailey, 2000).

The work of Buclet and Godard (2001) mentions other countries employing different economic incentives to accomplish recycling management goals. The United Kingdom, the Netherlands, Denmark, Estonia, France, and Italy, among others, apply landfill taxes to increase the relative cost of this form of elimination and bridge the cost gap between landfilling and recycling. Italy taxed plastic bags until the mid 1990s to stimulate substitution for other forms of packaging. France, Italy, and Greece renounce the establishment of a rigid hierarchy of technical options for managing waste, leaving local actors the task of defining the best combination of waste management strategies. All these examples have in common economic incentives and/or reduction of government intervention in the waste management sector. In comparison with the UK example, stated in the previous paragraph, these are piecemeal reforms, but, when

adopted simultaneously, demonstrate a strong market orientation of national governments.

3.2. Voluntary Solutions

Voluntary agreements to manage the recycling of packaging waste were first adopted in Germany, in the beginning of the 1990s. The *Duales System Deutschland* (DSD) organisation (a governance structure, if you will) licenses a trademark (the Green Dot) to producers, importers and packagers in exchange for a fee charge based on the quantity and types of packaging materials employed by manufacturers. The license fees charged by Green Dot consortia to its members are then used to pay waste haulers and/or municipal corporations for the collection of waste packaging materials. These governance structures are voluntary in a double sense. Firstly, they are cooperative arrangements between the national regulatory authority or agency in charge of implementing the EU Directive and the packaging industry to avoid the “heavy hand” tools of command-and-control legislation. Secondly, the agreements are self-governance structures between several members of the industry, including producers, manufacturers, importers, and recyclers, among others.

With only a few exceptions, most EU member countries adopted the Green Dot form of voluntary agreements to manage packaging waste⁴. However, these governance structures have slight variations among member states, making them more market or hierarchically oriented depending upon the policy instruments used by national governments. A few examples should clarify this argument.

The UK allows the formation of compliance schemes similar to Green Dot, but these operate in a competitive environment with other schemes and independent recyclers⁵. In contrast, Germany, Norway, Sweden, Finland, and the Netherlands employ regulatory policies to reduce packaging, with the Dutch and the Finns taking this approach a step further and including actual reduction goals, similar to CO₂ emission standards. Portugal has a governmental agency with coercive powers (the National Solid Waste Institute) responsible for yearly setting one single value to be paid

⁴ The exceptions are Finland and Italy. The United Kingdom has compliance schemes very similar to the Green Dot consortia, but the overall governance structure in place is clearly market-based in nature. In The Netherlands, voluntary agreements took the form of covenants between the interest groups involved in the packaging industry, subjected to enforcement by the national government.

⁵ The competitive environment depends upon market structure, among other things, as we shall see in section four.

for each type of material collected by accredited collection organizations, usually local government authorities or municipal corporations (Garcia, 2004). In this case, not only the market is completely absent, but also government intervention is extremely intrusive in voluntary arrangements, since it dictates the price that the Green Dot Consortium pays to local collection agencies and enterprises.

3.3. Hierarchical Solutions

Undoubtedly, the last example provides a nice link to discuss hierarchical solutions. The Portuguese case demonstrates that, more often than not, governments opt for the most intrusive policies, without allowing other, more spontaneous (organic) solution to evolve. As section four will show, when transaction costs are fairly low and the number of actors is relatively small, market arrangements or contracts are able to flourish between private actors. This could certainly be the case for the price to be paid to collection agencies by the Green Dot Consortium. Supporting government intervention using price controls, without first studying and attempting market-based or voluntary solutions seems, at least in theory, hasty, unwise, and overkill.

Even if private actors are inevitably present throughout the whole packaging waste recycling process, governments can play very different roles in the market. Mandatory deposit-return systems, minimum-recycling quotas, producer responsibility established by law are only but a few examples of command-and-control type of regulatory actions. As expressed previously, each of the governance structures is an ideal type and none can be enacted in its pure form. Hence, hierarchical solutions are also implemented using different voluntary and market-based solutions.

Legislation in Germany and the Netherlands established a strict hierarchy of technical options, sponsoring 'public technological interventionism' in order to accomplish national environmental goals (Buclet and Godard, 2001). Yet, this policy sends the correct message to private actors in the market place, since it highlights national priorities and redirects investments to new technology in order to accomplish these goals. Rather than being a simple command-and-control regulation, this approach can stimulate competition by promoting innovative technical options and broadening the range of solutions available in the future.

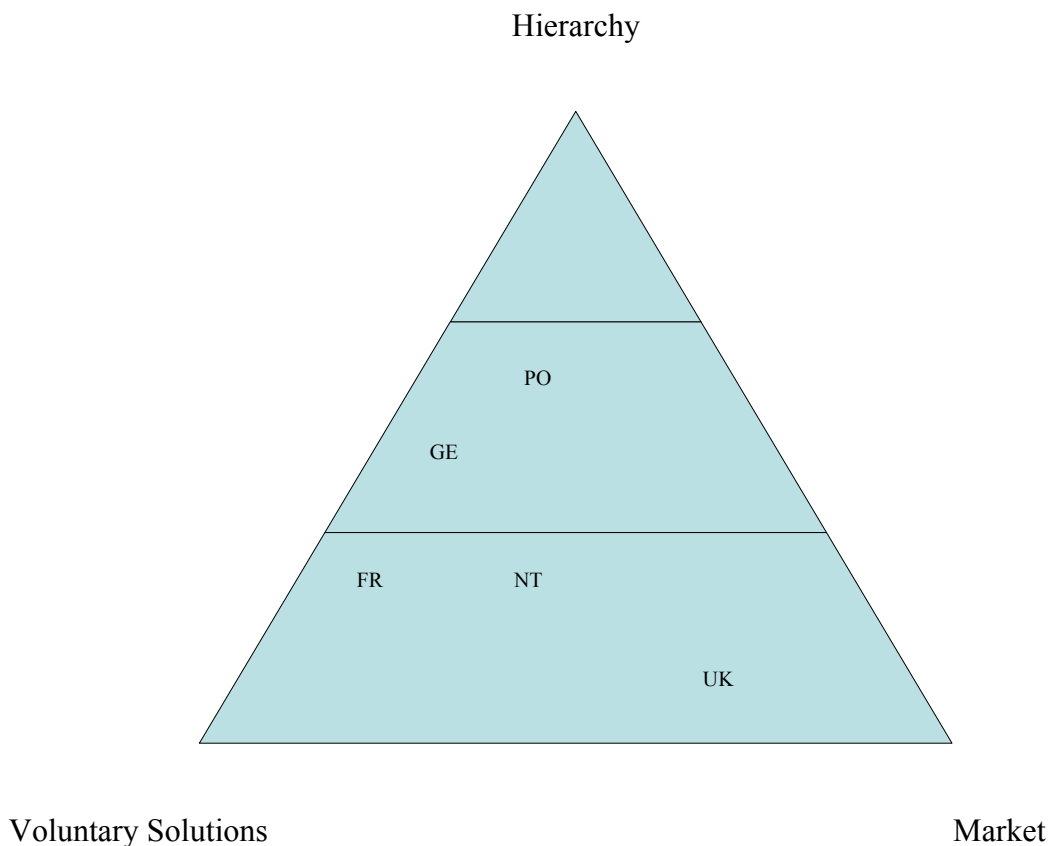
In contrast, the UK provides the finest example of government facilitating markets while abstaining from excessive, unduly intervention. However, even in this case,

government was responsible for engineering the market-based system, and still monitors private actors' actions, and enforces the UK 1997 Packaging Waste Regulations (Bailey, 2000).

3.4. Summary

Throughout this section, I have presented three governance structures employed by EU member states to comply with Directive 94/62/EC. The discussion has shown significant contrasts between countries, with the UK making a significant use of economic instruments and assisting the market in accomplishing the targets set by national and EU legislation, the Netherlands and France, albeit differently, relying more in voluntary agreements between representatives of the packaging sector and the respective governments, Germany opting for an approach heavily centred on DSD (from collection to recovery), with less government intervention and, finally, Portugal adopting a voluntary scheme heavily reliant on central government intervention.

Figure 2 – Relative Placement of EU Member States in the Governance Structure Triangle



Legend:
UK=United Kingdom
NT=Netherlands
GE=Germany
FR=France
PO=Portugal

The three vertices of the governance structure triangle are ideal types and cannot be found in real world applications. However, they provided the appropriate setting to make comparisons between the relative positions of countries. A preliminary attempt to carry out this task is made in figure 2.

It is important to highlight that this is a very rudimentary attempt to locate each governance structure within the triangle, with respect to the ideal types and each other. As we have implicitly assumed so far, each governance structure has relative merits and problems, which should be dealt with in the context of its practical implementation. The following section begins to uncover some of these problems, using a transaction costs framework to accomplish this goal.

4. Packaging Waste Governance Structures: A Transaction Costs Analysis

An analysis of these governance structures using a transaction costs framework gives a better understanding of their relative advantages and difficulties. Here, Directive 94/62/EC is taken as a given, affecting the packaging sector (manufacturers, importers, packagers) in all EU countries and the analysis will be focused on the perceived costs of the laws and the actions undertaken by national actors to minimize the costs of burdensome regulations. The governance structure adopted in each particular instance is the most attractive from the point of view of the profit-maximizing firms, according to the logic of economic efficiency and within the constraints imposed by the mandate legislation. This should be particularly true for countries predominantly adopting voluntary solutions, since these arrangements are regarded by the industry as better suited to deal with the technological uncertainty and complexity of the packaging sector (Whiston and Glachant, 1996). In any case, the incentive structure present in the institutional arrangement is decisive to make the actors further the goals of the regulations (Moe, 1984).

This section starts with a discussion of transaction costs frequently present in recycling markets, hindering free market solutions and contributing for the search of

alternatives within the market framework. Next, we turn to voluntary solutions adopted by many EU member states and pinpoint transaction costs more likely to be found in, or as a result of, these arrangements. While transaction costs thwarting market and voluntary arrangements are inherently different, they nevertheless help to explain failures in these structures in accomplishing the goals they intended to.

4.1. Recycling Market Transaction Costs and Alternative Solutions within a Market Framework

The existence of significant transaction costs in the recycling market, including excessive fragmentation, lack of technical information, and reduced secondary market development, especially on the end users' side of the market, prevents packaging waste collection and recycling transactions from occurring. In other words, because the market does not operate efficiently, the amount of packaging materials collected to be recycled is significantly lower than the one that could be obtained under a different governance structure or arrangement. More generally, different governance structures imply varying transaction costs which, in turn, lead to different degrees of efficiency in resource uses.

If the recycling market is left to its own devices, the number of transactions will be extremely low, due to severe distortions in prices and incentives. The literature reports some of these problems, both on the supply side and the demand side of the recycling market. The uncertainty present in recycling markets due to information failure with regards to the quantity and quality of supply and demand, leads to price ambivalence and dissuades investment decisions (Stromberg, 2004). A steady supply stream of secondary raw materials is absolutely necessary, if these undesirable price and investment inefficiencies are to be corrected. Government mandated collection and recycling targets are means to improve the quantity of supply, even if the quality of secondary raw materials has sometimes been affected (Sutherland, 2001).

Recycling markets have also frequently faced difficulties at the end users' side of the market. Since producers are not forced to pay for the true cost of disposal, virgin materials are still preferred over recycled ones. Even if aware of this, manufacturers are faced with significant difficulties in replacing virgin materials with recycled ones in their production processes, because government policies targeted to this goal have been absent and perverse incentives are still prevailing: regulation clearly favours the use of virgin materials over recycled ones (Ackerman, 1997). Sutherland (2001) points to

specific reasons for this resistance to change, namely the expensiveness of replacing manufacturing technology in order to be able to use recycled materials, the time frame required to get all the infrastructure in place, and, finally, the levels at which these investments must be made, usually involving not only the municipal level of government but also regional and national governments. Information distortions also contribute to inefficient decisions in the recycling market, because manufacturers prefer virgin materials, usually imported at higher prices, to recycled materials that could be obtained at lower cost and readily available from local or regional recyclers (Ackerman, 1997).

In order to overcome the inefficiencies resulting from a freewheeling market, the United Kingdom (UK) adopted, in 1997, Packaging Regulations that would allow the creation and implementation of a recycling market facilitated by minimal government intervention. A Producer Responsibility Note (PRN) is issued (sold) by accredited recyclers to producers or compliance schemes (similar to Green Dot). These become responsible for submitting them to the Environment Agency, which also monitors producer compliance (Bailey, 2000).

The UK governance structure is clearly market-oriented, since the PRN is an application of the producer-pays principle. However, this market is far from perfect. Many authors have pointed some of the inefficiencies present, namely that producers can disengage themselves from the recycling process, making government monitoring an expensive and highly uncertain task. Market distortions also include findings that some reprocessors withhold PRNs in order to drive up the price, market prominence of VALPAK (a consortia similar to DSD with over 60% of market share) practicing lower prices makes other schemes less attractive to packaging companies, and, finally, the lack of reinvestment of recycling revenues in new technology and innovation (Bailey, 2000; Strobl and Langford, 2002).

The difficulties faced by the UK governance structure can be explained by the fact that this is a market-based policy and not the actual market at work. Since this is a human engineered solution, policy details are likely to be missing, hence contributing to inefficient outcomes. In examining the Welsh case, Watts, Probert, and Bentley (2001) refer that the UK's market-based strategy has faced severe problems due to the lack of market development. Their study of small and medium-sized manufacturing enterprises concluded that the lack of supply was the most significant aspect in the glass sector, whereas the paper and board users were especially concerned with information

asymmetries regarding the quality of their products. These issues need to be addressed in order to stimulate investments in the package-recycling sector.

A set of policy instruments can be employed in order to overcome these difficulties and secure the development of the demand-side of secondary markets. I will address three types of policy instruments: labelling, government-industry partnerships for technology development, and economic incentives.

It is generally believed that full disclosure of a product's recycled content is likely to attract consumers with strong environmental preferences. However, the currently practiced Green Dot labelling does not provide specific information about each product's recycled contents. Hence, consumers are unable to reward manufacturers for their use of secondary rather than virgin materials, and this refrains producers from larger investments in recycled materials⁶.

The use of secondary materials by manufacturers can also be stimulated by technological development. Ackerman (1997) pointed the difficulties faced by industries wishing to employ secondary materials, mainly resulting from technology lock-ins using virgin materials. In order to alter this path dependency, Sutherland (2001) suggests partnerships between governmental organisations such as research laboratories or university department and industries wishing to use new technology adapted to recycled materials.

Finally, economic incentives play a decisive role in the development of secondary markets. Economic incentives include loans and grants aimed at funding capital and start-up costs, tax incentives and investment tax credits creating exemption from property taxes or from sales taxes on new recycling equipment, and the removal of all kinds of virgin material subsidies and preferences in order to improve the competitive position of recycled materials in the marketplace (Ackerman, 1997; Sutherland, 2001).

Government mandated recycling programs are likely to generate large quantities of scrap materials for which end markets are necessary. By employing proper economic tools and incentives to stimulate the demand-side of the market, governments anticipate the inevitably large increase in recycling materials collected that will result.

⁶ The use of the Green Dot label on packaging does not provide this type of information, since it simply checks that criteria are met in awarding the Green Dot mark. Information regarding the percentage of secondary materials employed in manufacturing each specific product is absent.

4.2. Voluntary Arrangements and Economic Transaction Costs

The UK system is clearly distinct, some might say, totally opposed to the voluntary agreements adopted by the majority of European Union countries. By the time the EU Packaging Directive was adopted, in 1994, Germany had been experiencing with the *Duales System Deutschland (DSD)* for a couple of years⁷. The remarkable success experienced by the Green Dot governance structure in its first year of existence, is confirmed by the huge amount of materials collected, resulting in Germany immediately reaching and surpassing the targets established by the EU Directive that was only adopted one year later. Although the DSD was highly successful in terms of collection rates, a few system features proved to be problematic and had to be adjusted.

In spite of the initial difficulties, the DSD governance structure and the Green Dot trademark became incredibly successful, as the Packaging Recovery Organisation Europe (PRO Europe) founded in December 1996 exported the system to twenty-six countries and registered the Green Dot trademark in 170 countries. In light of the problems discussed regarding market-based solutions, the obvious question is then, what are the net benefits (if there are any) of the Green Dot arrangement over the market solution?

Green Dot agreements are remarkable and ingenious governance structures in the sense that they help firms to deal with an expensive mandate, by significantly minimizing transaction costs that would occur in a free market. Mutual benefits resulting from negotiation and compromise accrue to the actors involved in these agreements and are only possible because governance structures can be designed to minimize economic transaction costs, facilitate cooperation and improve everyone's welfare.

The flexibility allowed by the EU to national governments in implementing the Directive can be seen as defensible in Coasian terms. Just like Coase (1937; 1960) proposed that certain market transactions involving large negotiation and monitoring costs should be integrated under the hierarchy of the firm, it can be argued that, due to inefficiencies detected in recycling markets, voluntary agreements are able to reduce transaction costs and achieve more efficient solutions. In the case of recycling market transactions, information and search costs may be too high, so that command-and-

⁷ Germany's decision to adopt and implement new regulations to recycle packaging waste inspired, at least in part, the decision of the EU Commission to design Directive 94/62 (Whiston and Glachant, 1996).

control or target-based regulation coupled with voluntary arrangements such as DSD are able to economize on these costs.

During the 10 years of experience with DSD, German authorities were able to correct many of the initial difficulties faced by this voluntary system, namely the excessive supply of recycling materials collected and injected to secondary markets causing abrupt price falls⁸, increase recycling capacity, and renegotiate contracts with local authorities and collection companies to reduce costs and promote adequate sorting of recyclables (Ackerman, 1997). Most of these problems resulted from the urgency placed upon recycling and recovery in Germany in the beginning of the 1990s, and did not appear in subsequent experiences.

Even when some problems remain, such as in the case of German waste paper market, solutions may reside downstream and not upstream. Baumgärtner and Winkler (2003) argue that waste management legislation turned supply of waste paper independent from its price and demand, frequently causing large drops in prices, but the answer to this is the development of the end users' side of the market, not a modification in legislation.

Several authors point out, however, that the main problem of DSD, as well as other Green Dot Consortia, is the extremely high costs entailed in operating the whole system (Ackerman, 1997; Strobl and Langford, 2002; Turner, 1996). Although this is probably true, the effectiveness of this governance structure was never called into question in technical and organisational terms, given the high recycling and recovery rates it achieves. Market-based systems, however promising they may be, do not present a track record such as the Green Dot Consortia with respect to delivering results.

Many criticisms to Green Dot voluntary agreements focus on the anti-competitive nature of these arrangements. Yet, Lehmann (2004) argues that seemingly anti-competitive features of voluntary agreements may actually display economic merits in the relationship with both downstream and upstream firms. In order to avoid inefficiency due to excessive centralization, DSD resembles a lot like a consumer cooperative, since companies are able to become co-owners at any time, the share amount is restricted by statute and transfer can only occur with the consent of a shareholders' meeting, and surpluses are channelled to reserves, decreased fees, or to

⁸ This was especially true for paper and plastics, leading to German waste exports to other European countries causing prices to drop, elimination rather than recycling in foreign countries, and, ultimately, the use of plastics in the steel industry, resulting in a dodgy process similar to incineration (Ackerman, 1997).

compensate poor managerial performance. Free rider problems that are likely to occur in the context of dispersed ownership were solved with the appointment of waste recovery industry representatives to the DSD supervisory board.

As far as upstream firms, the author explains that anti-competitive features such as asset specificity and long-term contracts placing waiting costs on new, more efficient, competitors are offset by governance structure features such as the representation of waste recovery firms on the DSD's supervisory board, collective bargaining between waste recovery firms and DSD, and subcontracting between waste recovery firms.

4.3. Transaction Costs and Institutional Design

The previous points have shown that each governance structure can fail, if lacking appropriate institutional design features. Lehmann's work demonstrates that governance structures such as DSD can be tailored to minimize transaction costs and avoid many inefficient outcomes of their operation. Certainly, DSD has improved many of the negative aspects detected in the initial stages of its operation. When institutional design lacks the adequate incentives to further mandate goals, the result is inefficient behaviour by the actors and welfare losses for society.

In the Portuguese case, the compensation value paid by the Green Dot Consortium to waste collection authorities is set by the national government⁹, thereby allowing for heavy lobbying by the packaging industry and waste collection authorities. Since the compensation value is negotiated every year, these inefficiencies are multiplied by the number of times negotiation occurs, leading to large rent-seeking costs. Recent experience shows that the packaging sector may be winning the wrestling match with waste collection companies, with executives of the latter threatening to sell their collected recyclables to the Spanish Green Dot Consortia – EcoEmbalajes España S.A.¹⁰, if a higher compensation value is not adopted. Deadweight losses resulting from this tug-of-war could certainly be avoided had a different design – collective bargaining, for example – been adopted. Hence, design is everything.

⁹ In fact, the process is even more complex and the consequences potentially more serious, since the National Waste Institute outsources the job to an auditing firm.

¹⁰ Interview with CEO of a Waste Collection Municipal Enterprise, 16/03/05.

5. Conclusions

In the study of governance structures, functionalist explanations, i.e., explaining the causes of institutional change by their consequences should be avoided (Alston, 1996). It would be premature to conclude that, because Green Dot arrangements are extremely successful all over Europe, the Packaging industry must have lobbied the EU for the passage of the EU Directive 94/62/EC. Although this may be true to a certain extent, competing explanations seem to be as plausible.

The high level of uncertainty in the recycling market, particularly in the packaging sector, has triggered voluntary agreements between the regulators and the industry, allowing for an unlimited search for alternatives and collaboration between the actors involved. For this reason, I would argue that governance structures in the packaging-recycling sector are not inefficient by nature; they become inefficient as a result of inappropriate design features and incentives to actors.

Moreover, the choice of specific governance structures at the national level did not occur by chance, but as a result of the recognition by national actors that certain governance structures were clearly more beneficial to the packaging sector as a whole. However, voluntary agreements in general, and Green Dot Consortia in particular, evolved in different directions depending upon the structure of the regulated industry, the role of political institutions and the actors on all sides of the field. The diversity of experiences with the Green Dot Consortium governance structure suggests hypotheses regarding different implementation strategies of the EU Packaging and Packaging Waste Directive at the national level.

A general assessment of voluntary arrangements indicates that the diversity features and frequent changes in design may be the result of very different motivations, including self governance improvements, correction of blatant inefficiencies, pressure of interest group activity, and politically triggered action from governments at different levels (national, regional, and local). Since more empirical analysis and case study research is clearly needed to explore the implementation of the Directive, future research should explore possible ways to employ cross-national data to test these hypotheses.

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Biographic Sketch

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